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University of Alberta

Postsecondary Participation in Newfoundland

by

Samuel Joseph McGrath

A thesis submitted to the Faculty of Graduate Studies and Research
in partial fulfilment of the requirements for the
degree of Doctor of Philosophy

Department of Educational Administration

Edmonton, Alberta

Fall, 1993

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled *Postsecondary Participation in Newfoundland* submitted by *Samuel Joseph McGrath* in partial fulfillment of the requirements for the degree of *Doctor of Philosophy in Educational Administration*.

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Dedication

To Professor J. W. Bulcock--Teacher, Mentor, Friend

Abstract

This study examined the extent to which an inventory of social psychological variables was associated with postsecondary participation in Newfoundland. This province is currently facing severe economic difficulties and it has the lowest postsecondary participation rate in Canada. Background variables pertained to personal, family, school, and community factors. Intervening variables were academic achievement, academic attainment, vocational self-concept, significant others, and barriers. Hypotheses were derived from the relevant research literature, a pilot study, and from discussions with senior educators in the Newfoundland postsecondary education system.

The sample consisted of 5,420 subjects from a provincial longitudinal study into youth transition. Information was obtained from this study, from the Department of Education, and from interviews with postsecondary administrators, high school principals, guidance counsellors, and former high school graduates who had not undertaken postsecondary education. The theoretical model was a series of structural equations in which linear relationships were estimated using multiple regression and path analysis. Independent variables that were linear composites were developed by using factor analysis.

Of the 17 independent variables in the study, 15 had statistically significant effects on participation. Those that consistently appeared in the various analytical models to be most highly related to participation were academic achievement, barriers, value of education, advanced mathematics, academic attainment, and well-being. Results from the various interviews supported the findings from the numerical analyses. Generally, the findings for all the independent variables were in the hypothesized direction and were similar to results found in other educational attainment research. From a policy perspective, the finding that five of the six most influential predictors of postsecondary participation were either within the direct control of the K-12 education system or under its influence was especially noteworthy. The most significant barriers to participation, namely, lack of finances and program access, were within the policy jurisdiction of the provincial government and the postsecondary education system. Even though the study added several atypical variables to educational attainment research, the correlation coefficients and differences between the means for all the variables were generally small. Further research on this topic using more parsimonious modelling and more refined selection of variables is warranted.

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Chapter 1

The Problem

Introduction

This chapter describes the background to the study, the nature of the problem, and the variables which were examined. The criterion variable and the predictor variables are highlighted with empirical support provided for their selection. Research questions are posed to focus the study and to provide a basis for subsequent analyses. Several assumptions are outlined related to youth and postsecondary education, followed by a list of definitions relating primarily to the independent variables. Delimitations and limitations are noted to indicate the parameters of the study and the possible applications of its findings. A brief overview of the organization of the thesis concludes the chapter.

Background

In the last five years, considerable attention was given in the public media and the labour market literature to the demographic, economic, and labour market realities of the 1990s and to the projected changes into the 21st century. Popular "buzzwords" included a greying population, global competition, displaced workers, industrial restructuring, innovative economic strategies, deskilling and reskilling of workers, and structural unemployment. Some reports (e.g., Barriers Project, 1989; ILO, 1988; OECD, 1986) suggested that industrial restructuring was becoming the norm rather than the exception on a worldwide scale. Others (e.g., Feather, 1983; Picot, 1987; Choate, 1985) referred to the intense competition for and the shortage of highly skilled workers in many industries and a growing need for both a higher level of employment skills in the future than in the past and for different kinds of skills. The general message was clear that modern industry was in a state of flux, the outcome of which would have serious implications for the traditional competitiveness of industrialized countries. Major innovations over a broad spectrum in industry were considered necessary in order to make the appropriate economic adjustments, not the least of which were in labour force development.

Subsequently, the linkage between education/training and the labour market has become increasingly important. Education and training have been traditionally perceived as primary instruments for determining labour market outcomes. That is, further education beyond high school was considered an assured means of improving opportunities to obtain employment, of increasing the range of opportunities for the type of employment obtained, of providing for higher salaries, and a means for assisting the worker to become more adaptable to occupational and industrial changes (e.g., Barriers Project, 1989; Sharpe & Spain, 1991; Krahn & Lowe, 1990; Tanner, 1990). In general, further education was and is thought to be able to assist new and existing workers to both obtain and maintain employment and to adapt to changing employment conditions and the nature of work.

In keeping with that assumption, the significance of this study was related to the larger issue of the transition of youth (specifically Newfoundland youth) to the labour market. Coincidentally, youth transition is the focus of a current, government-sponsored, longitudinal study in Newfoundland. The study, Youth Transition into the Labour Market (YTLM), was designed to track two cohorts of students over an anticipated seven years to examine the experiences they encountered during the transition period. (See Spain, Sharpe, Wiseman, & Wiseman, 1987.) The earlier discussion explicitly referred to the importance of higher education as an aid to gaining employment and to adapting to labour market changes. Krahn and Lowe (1988, 1990) and Ashton (1988) suggested education was also one of the most important means for resolving some of the difficulties which youth experience in making the transition from high school to full-time worker. The YTLM study is expected to be instrumental in identifying the importance of participation in postsecondary education in the transition of Newfoundland youth to the labour market. On that account, the primary sources of numerical data for the current study on participation were two surveys from the YTLM study.

The literature on youth transition viewed the transition experience as complex. Generally, the notion of transition referred to the changes which occurred in personal status as a youth left high school and eventually entered the labour force full-time. It may be considered to extend from age 16, the compulsory school attendance age requirement in most provinces, to age 24. Mason (1985), Sankey (1985), and Williams (1987) considered the transition experience to be strongly influenced by the acquisition of education and work skills even though the patterns of transition were often individualistic. Some youth make a decision to delay entry into the labour force by continuing their education at a vocational school, technical institute, or university. In this way, they tend to prolong the transition period. Other youth make a decision to seek full-time employment immediately after high school graduation, or as often happens, before completing high school. The latter stream of youth generally seem to encounter more difficulty in finding employment than do those who complete high school, and the kind of work the early leavers obtain is often part-time, menial, low-paying, and cyclic (Tanner, 1990; Samuelson, 1988; Hartnagel & Krahn, 1989). High school graduates have been found to fare only a little better, according to Empson-Warner and Krahn (1990). Ashton (1988) and Krahn and Lowe (1990) found that the best chance youth had of obtaining full-time, better paying, and more meaningful work was to continue on to postsecondary education after high school.

However, postsecondary participation rates across Canadian provinces are low in absolute terms. Statistics Canada (1991) reported that the national postsecondary participation rate for 1990-91 among 18-24 year olds was 30.9%. For Newfoundland, the rate reported was 21.9%, lower than the national average by 9% and the second lowest rate in the country. (See Table 1.1.)

This differential between Newfoundland's participation rate in postsecondary education and the rest of the Canada has been traditionally viewed in Newfoundland as the most serious problem facing postsecondary education. Crocker and Riggs (1980) provided comparison tables of provincial

Table 1.1

Postsecondary Participation Rates[1] in Canada by Gender and Province: 1986-1991

	Males					Females					Total				
Prov.	86-87	87-88	88-89	89-90	90-91	86-87	87-88	88-89	89-90	90-91	86-87	87-88	88-89	89-90	90-91
NFLD	18.0	17.7	18.6	18.6	19.8	19.3	20.0	21.4	22.2	24.1	18.7	18.8	20.0	20.4	21.9
PEI	16.8	16.7	18.3	19.2	22.5	19.8	21.3	23.2	25.1	27.3	18.2	19.0	20.7	22.1	24.9
NS	22.4	23.5	24.6	25.5	26.7	24.8	26.4	29.1	31.1	33.2	23.6	24.9	26.8	28.2	29.9
NB	19.8	20.4	21.2	21.5	22.5	19.4	20.5	22.1	23.5	25.4	19.6	20.5	21.6	22.5	24.0
QUE	34.4	34.4	35.3	36.1	37.5	37.1	38.7	40.3	42.5	45.2	35.7	36.6	37.8	39.3	41.3
ONT	26.0	26.3	26.8	27.4	29.1	25.8	27.3	29.1	30.6	32.6	25.9	26.8	28.0	28.9	30.8
MAN	19.1	19.0	19.1	19.0	19.6	17.9	18.6	19.7	20.4	21.4	18.5	18.8	19.4	19.7	20.5
SASK	19.9	20.1	20.8	21.9	23.4	19.4	20.8	21.8	23.9	26.6	19.6	20.4	21.3	22.9	25.0
ALTA	23.4	25.1	25.7	26.4	26.2	22.4	24.4	26.1	28.0	28.7	22.9	24.8	25.9	27.2	27.5
BC	19.9	21.0	21.2	21.6	22.1	18.2	19.6	20.8	22.0	23.4	19.1	20.3	21.0	21.8	22.7
CANADA	26.1	26.5	27.1	27.7	28.9	26.5	28.0	29.5	31.1	33.1	26.2	27.3	28.3	29.4	30.9

Source: Statistics Canada; catalogue 81-229

[1] As a proportion of the 18-24 year old age group

postsecondary participation rates for 1978-1979 which indicated Newfoundland's rates at that time were consistently the lowest in the country in all forms of postsecondary education. They took a conservative position on the direct relationship between educational levels of a populace and the level of economic well-being that prevailed. They acknowledged, however, that if for no other reason than to raise Newfoundland's educational levels to that of the rest of Canada, a serious need existed to improve participation in postsecondary education in the province.

The Royal Commission on Employment and Unemployment (1986) explicitly viewed higher educational attainment as the main instrument for economic renewal in Newfoundland. Where the existing system of higher education had been formulated on an earlier philosophy of preparing young Newfoundlanders for an urban industrialized society, extant economic and social realities dictated that education be viewed as a means of re-directing economic activity towards rural development and rural rejuvenation. The Commission advocated that education be seen as an investment, both for the individual and for society:

> It should be considered as not simply a matter of preparing people for a particular style of working and living, or training them to fit a specific niche within an industrial system, but rather as a way of improving the quality of the human resources of our society. It is a matter not only of training people to fill the jobs that become available, but also to be able to create jobs for themselves, improve their performance in the jobs they already hold, and contribute more to the social and economic fabric of their communities (p. 9).

The traditional pattern of rural society had changed in Newfoundland since the 1950s. Historically, male workers left their communities to work seasonally at various construction projects during the expansionist era that began in the 1940s and ended in the mid-1970s. Urban centres grew in size with population inflows and growth during that time, but generally most Newfoundlanders continued to live in rural communities. Training and skill development was largely devoted to the construction trades such as plumbing, electrical, bricklaying, and carpentry. With the virtual collapse of large scale construction, many Newfoundlanders faced prolonged unemployment. Fishing, which had been the economic mainstay for generations in hundreds of small communities, could not absorb these displaced workers. Also, women had begun to participate in the workforce in larger numbers and for longer terms since the 1960s (Crocker & Riggs, 1980, p. 6).

Sharpe and Spain (1991) extended the view of the Royal Commission (1986) cited above by suggesting that a social re-orientation was required for economic renewal to occur in rural Newfoundland. They said the entire social pattern needed to change from one where education was formerly seen as unimportant to one's economic well-being to one where education was viewed as essential:

> The old skills, learned largely on the job in an economy that was in place, must be replaced by skills and knowledge learned in the classroom. These new skills could be used in work that is far removed from the experience of the prospective workers, in enterprises not yet visualized, let alone funded, developed and put in place. For this to work, the process

> of redirecting training and education must also keep the present population where it is now; in the communities of Newfoundland (p. 11).

The low postsecondary participation rates in Newfoundland, referred to by Crocker and Riggs (1980) and also by the Royal Commission (1986), were equally viewed by many other postsecondary educators as a problem for the province. During preliminary preparations for this study, a telephone and personal interview survey was conducted with presidents, principals, and deans of institutes, community colleges, and the one university in the province, as well as with senior officials at the provincial Department of Education who had responsibility for postsecondary education. (See Chapter 3.) The unanimous view of these administrators was that the province's low participation rate, generally in non-university postsecondary education, caused problems for Newfoundland youth and that there was a need to generally increase postsecondary enrollments. The nature of the problem was described in terms of post-high-school labour market outcomes, employment opportunities, economic development, and personal productivity as related to economic independence. One administrator expressed the view that many of the province's underlying problems could be attributed to the generally low level of education of its populace. Eleven of the 13 educators said there was a need to study the problem, especially to answer the "why" question and the issues pertaining to participation. They acknowledged that no in-depth study had ever been done although there was broad information available on the topic. They indicated a study would be of interest to them in that it could provide information relevant to their concerns about the issue.

Postsecondary participation in Newfoundland had not been extensively studied in the systematic way that was characteristic of this study. In the past 15 years, several master's theses were completed on issues pertaining to youth in Newfoundland (Baker, 1978; Burry, 1975; Coffin, 1976; Duncan, 1973; May, 1975). These studies had focused on areas such as educational plans of youth, career decisions, knowledge of postsecondary institutions, and dropouts. Several government-sponsored studies or position papers were also completed (Crocker & Riggs, 1980; Montgomery, 1982; Batten et al., 1974; Kealey, 1986). These research projects reported on ways to improve student retention and postsecondary participation, employment issues related to women in the labour force, and/or equity issues of working women generally. Only one study (Parsons, 1974) specifically devoted attention to the personal and environmental antecedents of postsecondary participation--which was the focus of this study--and that attention was indirect in that participation per se was an ancillary issue to the study. Because of this lack of direct research, the current study was a foundational, exploratory study aimed towards increasing our understanding of the factors which might influence the decision made by young people about furthering their education beyond high school.

An overarching assumption of the study was that postsecondary participation is a social issue which has its roots in the family and the school.

(See Breton, MacDonald, & Richer, 1972; Williams, 1972, 1987; Wiseman, 1983; Hayden & Carpenter, 1990.) Dynamics between the relevant variables are interwoven and complex. Social psychological variables which the available literature and prior research suggested are relevant to the issue are outlined in the theoretical framework shown in Figure 2.1, Chapter 2.

Statement of the Problem

This research project had two major purposes: (a) to identify an inventory of variables considered to influence participation in postsecondary education, and (b) to examine those variables through quantitative and qualitative means in order to determine the nature and the degree of their influence on participation. Measurements were focused on a selection of sociological and psychological factors related to (a) the personal schema of the young persons under study, (b) their family, (c) school, and (d) community environments, and also (e) on whether other variables intervened and acted as mediating influences on the ultimate decision to participate in postsecondary education.

Variables Studied

One criterion variable was used in this study, namely, Participation in Postsecondary Education. Participation was defined as enrollment by the sample subjects in a program of studies at a postsecondary institution that extended for six months or longer. All other variables were treated as independent variables.

Seventeen independent variables, nine of them linear composites, were used in the study as specific concepts considered to influence postsecondary participation. Examples of the linear composites include Well-being, Career Information, and Barriers. Such composites were constructed from specific items in the data sets that appeared to be reflective of the variables. Items that scored highly when subjected to factor analysis were selected for the respective composite. All independent exogenous variables, i.e., those that were not viewed as intervening variables, were subdivided into four categories: personal variables, family variables, school variables, and community variables. The specific items in each broad category were as follows:

Personal Variables
. Gender
. Career Plans
. Well-being
. Learning Style

Family Variables
. Value of Education in the Family
. Family Size (number of siblings)

School Variables
. Guidance
. Career Information
. Mathematics Program

Community Variables
. Geographical Region
. Rurality (Rural/Urban)
. Attachment

Additionally, the following intervening variables were examined to determine if they mediated the effects of background variables on participation: Academic Achievement, Academic Attainment, Significant Others, Vocational Self-concept, and Barriers. "Academic Achievement" was the average mark obtained on grade 12 public examinations in subjects required for first-year university admission in Newfoundland. "Academic Attainment" meant having graduated from high school. "Significant Others" pertained to the influence of parents vs. the influence of teachers, peers, and others on the respondents' post-high school choices. "Vocational Self-concept" referred to the way respondents viewed themselves in the ease in which they could perform certain occupations. "Barriers," defined as structural obstacles which might impede participation in further education, encompassed notions such as access to programs, costs of participating in postsecondary education, meeting admission requirements in terms of academic pre-requisites, employment (having obtained a job), and distance from home to a postsecondary institution. The theoretical model described in Figure 2.1, Chapter 2, lists all the independent variables and the hypothesized process of their effects on the criterion variable, Participation.

Rationale for Selection of Variables

Both empirical and theoretical justification existed for selecting the particular variables which were examined in this study. This section deals with the empirical rationale for selecting the criterion variable and the 17 independent variables. Chapter 2 provides the theoretical rationale and adds further empirical support for the selection of both sets of variables.

Criterion Variable

The primary antecedent to selecting Participation in Postsecondary Education as the criterion variable was a statistical report on postsecondary participation rates in Canada. This Statistics Canada (1991) publication compared participation rates in each province and showed that Newfoundland was the second lowest in the country in terms of 18-24 year olds who had participated in some form of higher education in 1990-91. (See Table 1.1.) A second precursor to the selection was a series of post hoc interviews with administrators of public postsecondary institutions in Newfoundland in order to obtain their views about postsecondary education in the province. During the interviews, 92% percent of the administrators indicated that Newfoundland's low postsecondary participation rate was a problem. Approximately 70% said there was a need to study the problem in order to help identify and explain some of the reasons for the low rate. The results of these interviews, together with the statistics on national participation rates, confirmed the selection of Participation in Postsecondary Education in Newfoundland as the criterion variable for the study.

Independent Variables

The preliminary selection of the independent variables was made following an initial review of the youth transition literature, completion of a pilot study among students at the University of Alberta, and the outcome of the series of interviews with postsecondary educators. Demographic and geographic variables such as rurality, distance, gender, and region were examined in several earlier studies (Wagner, 1981; Williams, 1987; Wilson, 1991; among others) as were the social psychological variables of academic achievement, educational attainment, family background, and peer influence (Williams, 1987; Empson-Warner & Krahn, 1990; Sewell, 1971). Linear composites such as career plans and significant others were examined by Williams (1972), Conklin and Dailey (1981), and Sharpe and Spain (1991), and self-concept by Kotter, Faux and McArthur (1978), and Marsh (1984). Research and information pertaining to personal and structural barriers in educational attainment stemmed from Kerckhoff (1976), the Australian Education Council--(AEC)--(1991), and Wilson (1991). A number of studies conceptualized such variables as academic achievement and attainment, psychological support from significant others, and vocational self-concept as intervening variables to higher education involvement. (See Robertshaw & Wolfe, 1983; Clifton, Williams, & Clancy, 1990; Williams, 1987.) Career development variables, including career information, counselling and guidance services, were examined by Sankey (1985), Super (1986), and LeClair (1988).

In general, the initial perusal of the literature provided a sufficient overview of pertinent personal and environmental variables, as these variables related to transition and higher education, to warrant their inclusion in this current study. In other words, the kinds of demographic, sociological, and psychological variables that were used to measure transition or schooling outcomes elsewhere seemed to have a general acceptance among those researchers which gave a legitimacy to including these kinds of variables in this study.

This tentative conclusion was supported by the results of a pilot study conducted by the researcher (1991) at the University of Alberta. (See Appendix A.) The primary purpose of the pilot study was to gather opinions about factors that might influence young people to attend or not attend a postsecondary institution after high school. Such opinion was expected to suggest possible independent variables that could be examined in the participation study. Questionnaires were distributed to graduate students enrolled in master's or doctoral programs in educational administration and to third and fourth year undergraduate students enrolled in Educational Administration 401. Some of the questionnaires given to Ed Adm 401 students were subsequently distributed to their friends and acquaintances outside the University of Alberta. In all, 58 questionnaires out of the 94 originally distributed were returned for a response rate of 62%. Master's and doctoral students returned 37% of the questionnaires, while 63% of the responses were from Ed Adm 401 students or their non-postsecondary friends. Of the total respondents, 7% indicated they had never attended a postsecondary institution. These were the friends of the Ed Adm 401 students who had completed the questionnaire.

Responses to the questionnaire items confirmed earlier expectations of the results of the pilot. Individual responses were helpful in identifying independent variables for the main study. For example, in response to statement No. 7 on the instrument which provided a listing of reasons gathered from the literature why young people do not undertake postsecondary education, more than half the respondents identified the influences of lack of career direction, financial and academic barriers, low self-esteem, attachment to home and community, lack of career guidance and career information in high school, poor motivation and aspiration, poor learning style, lack of value for education, and peer and family influence. When asked in an open-ended question to identify the single most important reason why young people did not go on to further education, respondents gave answers which paralleled one or more of the categories on the list. A sample of responses, in abbreviated form, included the following:

. do not qualify
. negative attitudes toward education
. students not taught to learn on their own
. no direction to what they want to do
. fear of not making it
. financial restraints
. lack of guidance and career planning
. poor motivation
. personal and health problems

The respondents were asked to identify specific issues that the researcher should explore in the participation study. They suggested such items as: barriers to participation, gender, value of education in the family, students' sense of well-being or esteem, amount of career information obtained, high school grades, help from counsellors and other people, and motivation.

Interviews with administrators of postsecondary institutions in Newfoundland yielded responses that were similar to many of the factors for non-participation raised by respondents in the pilot study. When asked from what perspective the problem should be studied, the 70% of postsecondary educators who said a study was required emphasized such areas as social and economic issues, motivation, barriers to participation, value of education in the family, community attachment among rural students, guidance and career counselling, influence of peers and others, students' ability to cope with postsecondary academics, regional disparities, career and occupational information, physical and mental well-being of young people, and degree of family support and encouragement. When asked in a further question (5a) what some of the barriers to participation might be, the administrators suggested these aspects:

- . distance
- . cost
- . lack of academic prerequisites
- . lack of career counselling and information
- . lack of encouragement
- . negative family values for education
- . negative impressions by young people of postsecondary institutions
- . lack of direction to their lives
- . community attachment
- . poor preparation in high school
- . poor motivation

The similarity of the responses from both groups of people in the two preliminary studies about factors influencing postsecondary participation was evident. Both groups also identified areas for study that closely paralleled areas that had been studied in the literature. On the basis of the empirical support from those three areas, the independent variables for this study seemed to have sufficient support to include them as possible indicators of postsecondary participation in Newfoundland.

Research Questions

The purpose of the study was to identify factors which influenced a young person to undertake postsecondary education. The main research question below focused the study. A number of subsidiary questions are listed which helped to guide the actual development of the study. They also provided a framework for the subsequent analysis of the data.

Main Research Question

Which environmental and student background variables in Newfoundland are most frequently associated with enrollment in a postsecondary educational institution?

Subsidiary Questions

1. To what extent are personal variables associated with participation in postsecondary education? (Personal variables were Gender, Career Plans, Well-being, and Learning Style.)

2. To what extent do family variables influence participation in postsecondary education? (Family variables were Family Size or the number of children in the family, and Value of Education, i.e., the value held for education in the home.)

3. To what extent are school variables related to participation in postsecondary education? (School variables were Guidance, Career Information, and Advanced Mathematics.)

4. To what extent do community variables affect participation in postsecondary education? (Community variables were Region, i.e., geographical region, Rural or Urban community, and Attachment to home and community.)

5. To what extent do social psychological variables intervene to mediate the effects of participation in postsecondary education? (Specific intervening variables were Academic Achievement, Academic Attainment, Vocational Self-concept, Significant Others, and Barriers.)

Ancillary Question

To what extent do the effects of the exogenous variables on the endogenous variables differ between males and females? (Endogenous variables were the five intervening variables in the study. Exogenous variables were the remaining independent variables.)

Definition of Terms

1. **Large High School**---a school with more than 10 professional staff. (This was an arbitrary designation. Traditionally in the Newfoundland context, school size ranged from many one-room, one-teacher, all-grade schools to a few high schools with more than 40 professional staff.)

2. **Rural**---census metropolitan areas, census agglomerations, and other communities with populations of 5,000 or fewer people (Newfoundland Statistics Agency, 1986).

3. **Urban**---census metropolitan areas, census agglomerations, and other communities with populations of more than 5,000 people (Newfoundland Statistics Agency, 1986).

4. **Region**---Region 1 = Avalon Peninsula; Region 2 = South Coast and Burin Peninsula; Region 3 = Central Newfoundland, Northeast Coast, and Bonavista Peninsula; Region 4 = West Coast, and Northern Peninsula; Region 5 = Labrador (Newfoundland Statistics Agency, 1986).

5. **Study Population**---the full cohort of the 1988-89 grade 12 (Level III) students in Newfoundland.

6. **Study Sample**---respondents to the third Level III survey of the Youth Transition into the Labour Market (YTLM) study; N = 5,429.

7. **UI**---unemployment insurance benefits.

8. **Career Plans**---respondents' anticipated plans in life regarding education and likely occupation.

9. **Value of Education**---extent to which education per se is valued at home.

10. **Extent of Guidance**---extent to which respondents consulted with the guidance counsellor while they were in high school and whether the service was helpful; later referred to as **Guidance.**

11. **Extent of Career Information**---extent to which information on careers and occupations was available to respondents; later referred to as **Career Information**.

12. **Influence of Significant Others**---respondents' perceptions of parental influence on their participation choices compared to the influence of friends, peers, teachers, relatives, and others; later referred to as **Significant Others**.

13. **Attachment**---degree to which respondents were attached to family and home community.

14. **Barriers**---perceived barriers to participation in postsecondary education.

15. **Vocational Self-concept**---the view youth have of themselves as workers in terms of the kinds of occupations they think they could easily learn.

16. **Well-being**---respondents' level of satisfaction with life in general and relative absence of problems or anxieties.

17. **Learning Style**---respondents' preferred method of learning.

Assumptions

The following important assumptions were made about education in general, postsecondary education in particular, and the significance of this study. They collectively supported the main focus of the study--identification of influential factors that affected participation--and provided a basis for the selection of some of the independent variables. In random order, they were as follows:

1. Participation in postsecondary education is the ultimate decision of the individual but is influenced by factors often outside the person's control.

2. Young people perceive the presence of barriers which act as constraints on their preference to undertake postsecondary education.

3. Education is a universally valued activity in our society, and in general it leads to greater success by individuals in obtaining and maintaining employment and achieving economic independence.

4. The choice to participate in postsecondary education is made on the basis of individual interests and capacity. Institutional goals of increased participation are contingent on the degree to which such individual interests and capacity are realized.

5. Further education beyond high school eases the transition from school to work by reducing the difficulties youth experience in moving into the labour market.

6. Research of the type undertaken in this study could help in identifying solutions to the problem of low participation in postsecondary education in Newfoundland. Findings will help identify impediments to participation, impediments which can be addressed by institutional programs and services.

7. Some of the independent variables were viewed as mathematical linear composites; for example, Career Plans, Career Information, and Well-being. Items from the two survey questionnaires were selected as composite indicators if they appeared to capture the essence of the independent variable under consideration. Comparable empirical research conducted elsewhere and theoretical perspectives from the literature aided in the selection of the indicators.

Delimitations

Delimitations refer to the boundaries or parameters of the study. They apply to the nature of the subjects, to time, and to space. For this study, the delimitations include the following:

1. Only variables which were considered to be influential to postsecondary participation were examined in the study. (Generalizations to other variables, youth cohorts, or to other time frames would be speculative.)

2. Findings from the study pertain only to the respondents who participated in both the first and third surveys of the Youth Transition into the Labour Market (YTLM) study, and to the time frame which the study covered. (Application of the findings to other surveys in the longitudinal study would be coincidental.)

3. Information from survey 1 was obtained at a time when all but a very few of the respondents were pre-high school graduates, and all were in high school. Information from survey 3 was from respondents who were nearly all high school graduates and out of school since June, 1989.

Limitations

Limitations refer primarily to the nature of the data and to the possible effects of the conditions under which the data were given. The following were limitations inherent in this study:

1. The completeness and accuracy of the respondents' recall in survey 3 may have been affected by their experience since high school and by their current attitude and welfare status. By the time the third survey data were collected, youth from the YTLM Level III sample had been out of high school for a year-and-a-half. Some were students at postsecondary institutions, some were graduates of postsecondary programs, still others had not attended any educational institution and had either worked full-time during the interim, part-time, seasonally, or had not worked at all. The respondents would generally have been 20-24 years old.

2. The measurement models used in the quantitative analysis are recursive models because linearity in one direction only was tested. A simplistic assumption was made that the major direction of the causal influences was from the exogenous variables, through the endogenous variables, to the criterion variable, even though it was acknowledged that reciprocal effects were possible and likely. The main point of interest in the study was to examine the relative effects of the independent variables on Participation.

3. Data from both surveys were collected by the YTLM researchers for a purpose other than examining postsecondary participation. The validity and reliability of items in the questionnaires selected for this study may be affected as a consequence. In a study design specific to postsecondary participation, the instrument items could well have been designed differently or the questions phrased in a style other than the style used in the YTLM study.

4. The strength of the linear composites developed in the study was limited by the number of items from both surveys used to construct them. Items developed *a posteriori* for the composite may have yielded different factor loadings.

5. Concern for the manageability of the study limited the extent of the statistical analyses. For example, the data lent themselves to a series of regression analyses that would optimally yield a most parsimonious model if successive antecedent analyses were conducted. The number of independent variables in the study, as well as the number of intervening variables, were

speculated to require a multi-volume document to fully report an extended analysis. Consequently, parsimony in the regression modelling was not attempted in the study.

Organization of the Thesis

There are six remaining chapters to the thesis. Chapter 2 reviews the literature and research related to postsecondary participation and discusses the theoretical framework and hypotheses that guide the study. Chapter 3 describes the method used to collect, prepare, and analyze the data on which the study is based. In Chapter 4, the linear composites developed to represent many of the independent variables are presented and analyzed. Chapter 5 presents the statistical analyses on the quantitative data and describes pertinent findings from the qualitative data collected through interviews with relevant stakeholders. The results from both sources of data, quantitative and qualitative, are discussed in Chapter 6. The concluding chapter gives a general summary of the study, states the conclusions emanating from it, and suggests a number of implications for educational administration and further research. A reference list of sources cited in the research and a series of appendices which supplement the quantitative and qualitative aspects of the study comprise the remainder of the thesis.

Chapter 2

Review of Literature and Theoretical Foundations

Introduction

This chapter consists of a review of the literature and research related to educational attainment generally and to postsecondary participation specifically. Because educational attainment is usually encompassed in the literature on status attainment, a preview of the status attainment literature is given to provide a background to the more pertinent research on educational attainment.

The review begins with a discussion of status attainment research and of the variables that have been typically examined in studies of this kind. Only variables that parallel the exogenous and endogenous variables selected for the present study are discussed. The focus is on the theoretical and comparative literature that has examined participation in postsecondary education. In many cases, the relevance is indirect. That is, much of the related research either pertains to the influence of demographic and social origin variables on educational achievement or aspirations rather than participation, or it examines the role of educational attainment to later occupational and social mobility. (See for example, Guppy, Mikicich, & Pendakur, 1984; Clarke & Youngman, 1987.) Theoretical models characteristic of status attainment research are then described and discussed to show the historical antecedents of the conceptual model selected for the current study. The adopted conceptual model is then described and analyzed. The purpose of the chapter is to show the nature and extent of the theoretical and empirical support for the variables selected for the study, and for the causal ordering of the paths that guided the subsequent analyses.

Status Attainment Research

Status attainment research in North America, Australia, and Europe has generally been the domain of sociology. The outcome variable in such research has either been occupational attainment or educational attainment. The concept of status attainment refers to the various statuses related to education, occupation, self-concept, or decision-making capability that respondents under study have attained. These statuses are linked to social background or ascribed characteristics, i.e., characteristics which respondents have derived from the social and economic status of their parents, or to achievement characteristics which respondents have acquired through personal effort (Williams, 1987). Characteristics of social origins normally have included gender, rural or urban residence, geographical region, type of school attended, family size, and various measures of socioeconomic status; for example, father's occupation and level of education, mother's education and occupation, family income, or household wealth. Intervening variables which mediate the effects of the source or exogenous variables on the dependent variable commonly have consisted of academic achievement, educational attainment, influence of significant others, employment status, self-concept, and aspiration.

The similarities of the variables used in either occupational attainment or educational attainment research reflect the strong similarity in the conceptual models developed to guide the studies. Generally, the feature which distinguishes the two types of research is the outcome variable. Occupational attainment was the criterion variable in much of the early status attainment research (pre-1970s) while educational attainment, traditionally an intervening variable in occupational attainment studies, became the focus of much of the status attainment research since the late 1970s.

Occupational Attainment

While status attainment research with occupational attainment as the criterion variable was undertaken prior to Blau and Duncan's (1967) seminal work at the universities of Michigan and Chicago, the reporting of that study started what was to be a new tradition in status attainment research (Carpenter & Hayden, 1985). The model which Blau and Duncan developed to explain the relationship between social origins and ultimate social status among American males was emulated in numerous successive studies. (See for example, Sewell, 1971; Haller & Portes, 1973; Marini, 1980; Bielby, 1981; Williams, 1972, 1987; Clifton, Williams, & Clancy, 1990.) The basic model was modified in the course of those studies but its fundamental structure has been retained so that the more complex and higher predictive models are conceptually comparable to and are labelled as being in the Blau and Duncan tradition (Sewell & Hauser, 1972; Otto & Haller, 1979; Williams, 1987; Hayden & Carpenter, 1990). More discussion of the Blau and Duncan status attainment model is given in a later section of this chapter.

Blau and Duncan (1967) studied a national sample (N = 20,000) of American male adults, ages 20-64, in order to test the effects of social origins on their occupational status. The main difference between this study and earlier national surveys of occupational mobility conducted in the U.S., Britain, Denmark, Sweden, and other countries was that whereas other studies focused on measuring the extent of mobility and the ranking of occupations, Blau and Duncan's main concern was on the factors which influenced occupational mobility (p. 8). They expressed the concern as follows:

> A substantive problem of central concern to us, which mobility research in the past has largely neglected, is, therefore, how the observed patterns of occupational mobility are affected by various factors, such as a man's color, whether he has migrated, or the number of his siblings and his position among them. We found it advantageous, however, to reformulate this problem by decomposing the concept of occupational mobility into its constituent elements: social or career origins and occupational destinations. Rather than asking what influence a variable--community size, for instance--exerts on upward mobility, we ask what influence it exerts on occupational achievements and how it modifies the effect of social origins on these achievements. The main reason for this reformulation is that the likelihood of upward mobility depends, of course, greatly on the level from which a man starts (p. 10).

Level of education of the respondents and their first job were hypothesized to be intervening variables which mediated the effects of father's education and occupation on the criterion variable, namely, occupational attainment in 1962. One of the principal findings of their study was that the educational attainment of respondents exerted the strongest direct influence on their later occupational achievement with a correlation coefficient between education and occupational attainment of .60 and a path coefficient of .39 (pp. 402-403).

A major study at the University of Wisconsin (1957) provided data for numerous occupational attainment studies that built on the Blau and Duncan (1967) model. (See for example, Sewell, Haller, & Portes, 1969, Sewell, Haller & Ohlendorf, 1970; Featherman & Hauser, 1975; Otto & Haller, 1979; Jencks, Crouse, & Mueser, 1983.) Approximately 31,000 graduating high school seniors in all public, private, and parochial schools in Wisconsin were surveyed to gather information on their education and occupation plans, intelligence percentile rank, socioeconomic status of their parents, and the educational attitudes of the students and their families (Sewell & Shah, 1967).

Variables used in the follow-up studies to test actual occupational outcomes increased the number of independent variables, both social origin and intervening variables, originally tested by Blau and Duncan. For example, Sewell et al. (1969) used data on 929 farm boys who were included in the original 1957 Wisconsin study and also in a 1964 follow-up to examine occupational outcomes. (See Sewell & Shah, 1967.) They incorporated father's education and occupation in their socioeconomic variable but expanded the original Blau and Duncan variable for SES by including mother's education and parental income. They also included several sets of intervening variables. Whereas Blau and Duncan tested the respondents' educational attainment and first job as variables mediating the influence of social origins on occupational attainment, Sewell et al.

(1969) tested academic performance, significant others' influence, level of educational aspirations, level of occupational aspirations, and educational attainment as intervening variables between social origins and occupational attainment.

Their main findings were that all the independent variables accounted for 34% of the variance in level of occupational attainment and 50% of the variance in educational attainment (p. 89). Blau and Duncan (1967, p. 133) had found that 42% of the variance in occupational attainment was attributable to all the independent variables and that the social origin variables of father's occupation and education accounted for 26% of the variance in the respondents' educational attainment (p. 174). The variance differential of 24% for educational attainment between the two studies cannot be justifiably compared because Blau and Duncan had tested the effects of only two independent variables on educational attainment whereas Sewell et al. (1969, p. 85) tested six. The reason for the difference could logically have been the increased number of independent variables tested in the later study. Other central findings of the Sewell et al. (1969, p. 89) study were that educational attainment accounted for 27% of the variance in occupational attainment (compared with 35% found by Blau & Duncan, 1967, p. 133) and that the influence of significant others was statistically significant for its direct effects on levels of educational and occupational aspirations and on educational attainment (p. 88). They suggested that in relation to the influence of significant others "there may well be a substantial pay-off from more refined work with this variable" (p. 90).

Sewell, Haller, and Ohlendorf (1970) extended the Sewell et al. (1969) model by including three additional paths of influence while otherwise maintaining the latter's theoretical model. Their dependent variable was also occupational attainment. They studied 4,388 males from the 1964 follow-up of the 1957 Wisconsin study to see if results would differ for youth from diverse residential backgrounds. Sewell et al. (1969) had tested the effects of social psychological variables on occupational attainment only for males who grew up on farms. The findings of the 1970 study confirmed that educational attainment had a substantial impact on early occupational attainment (p. 1023). In effect, the additional paths model showed that educational attainment had a greater influence on occupational attainment, accounting for 38% of the variance in the model (p. 1022) compared with 27% in the Sewell et al. (1969) study [and approximately 35% in the Blau & Duncan, 1967, study reported earlier]. The Sewell et al. (1970) study also confirmed the influence of significant others as an important variable in status attainment and that the effects were significant for all five of the community size subsamples that they had selected (p. 1025).

Otto and Haller (1979) used the findings from a 1972 study that utilized the Wisconsin sample (Sewell & Hauser, 1972, 1975) and compared them with data for males from two other longitudinal studies (Alexander, Eckland, & Griffin, 1975; Otto & Featherman, 1975) to test the comparability of results from all four studies. Unlike the earlier studies which utilized one dependent variable (occupational attainment), Otto and Haller (1979) tested the effects of the social psychological independent variables on three dependent variables, namely, educational attainment, occupational attainment, and earnings (p. 896). Independent variables included mother's education, parental educational encouragement, and friends' educational plans, in addition to the variables of father's occupation and education, mental ability, academic performance, and educational and occupational aspiration which were standard independent variables in earlier studies using the Wisconsin data. (See Sewell et al., 1969; Sewell et al., 1970.) The study concluded that its results and those of the other three studies listed above confirmed the social psychological explanation of the status attainment process. Their estimates "accounted for as much or more variance than those previously reported in the [other] research" (p. 903).

A comparable study based on the Wisconsin model utilized data from Project Talent which sampled 100,000 grade 11 students throughout the U.S. in 1960. (See Flanagan, Davis, Dailey, et al., 1964.) Jencks et al. (1983) studied a representative subsample (n = 1000) which was confined to males who were not raised on farms. Their dependent variables included educational attainment, occupational attainment, and earnings, which paralleled those selected by Otto and Haller (1979). The selection of independent variables was also identical except for the inclusion of parents' income in the later study as an additional measure of socioeconomic status. Ironically, the purpose of the study by Jencks et al. was not to replicate Otto and Haller (1979) but to replicate two other studies (Sewell & Hauser, 1975; Alexander, Eckland, & Griffin, 1975) which had also adopted the Wisconsin model of status attainment. The parallel with Otto and Haller's study was serendipitous, which supports the statement made above that the original Wisconsin model was a seminal one that had been widely emulated in successive studies.

Findings from the study by Jencks et al. (1983) were broadly similar to those of the Wisconsin study (Sewell & Hauser, 1975) and the Explorations in Equality of Opportunity or EEO study (Alexander, et al., 1975). In all three studies, academic aptitude, grades, respondents' educational plans, and friends' educational plans were found to be statistically significant predictors of educational attainment. Occupational aspirations, while statistically significant in the Jencks et al. study and the Wisconsin study, was not statistically significant in the EEO study (p. 8). In terms of the four measures of parental socioeconomic status (father's and mother's education, father's occupation, and parent's income), Jencks et al. (1983) reported that the SES variable explained 15% to 18% of the variance in educational attainment in the three surveys and that education was by far the most important determinant in all of them of occupational attainment (p. 6), a finding that consistently appeared in the studies previously mentioned and in others (Jencks & Brown, 1975; Hauser & Daymont, 1977; Sewell, Hauser, & Wolf, 1980). Unlike results from the Wisconsin (1975) or the EEO (1975) studies for the mental ability variable, Jencks et al. (1983, p. 8) found that their variable of academic aptitude had a greater effect in their study on educational attainment with a standardized regression coefficient of .459. This compared with coefficients for intelligence percentile ranking of .367 in the Wisconsin study and .378 in the EEO study.

All the studies described and cited above were American, in which American data were utilized. A vast sociological literature on the occupational attainment process exists for other countries. (See for example, in Canada, Harvey & Kalwa, 1983; Boyd, Goyder, Jones, et al., 1981, 1985; Cuneo & Curtis, 1975; Anisef, 1982; in Australia, Karmel, 1983, 1984; Marsh, 1984; Broom & Jones, 1976; Saha, 1982; in Great Britain, Halsey, Heath & Ridge, 1980; Bosworth & Ford, 1985; Osborne, Cormack, Reid, & Williamson, 1984; and in the Netherlands, DeGraaf, 1986; Dronkers, 1983; Olneck, 1977.) The intent of this current review is to show that in the past 25 years, the nature of the research conducted in North America was modelled on the processes developed in the original and successive modifications of the Wisconsin model which itself had its genesis in the Blau and Duncan (1967) study. Contemporary research on status attainment continues to be modelled on these conventional designs (Sharpe & Spain, 1991; Clifton, Williams & Clancy, 1990, 1991; Hayden & Carpenter, 1990; Stergar & Lapajne, 1990).

Educational Attainment

Occupational attainment research and educational attainment research is similar. The difference essentially is in the causal ordering of the educational attainment variable in the theoretical model. In occupational attainment research, education is placed either as an intervening variable (Blau & Duncan, 1967) or as one of the several dependent variables (Sewell & Hauser, 1975; Otto & Haller, 1979; Jencks et al., 1983). In educational attainment research, the educational attainment level of the survey respondents is characteristically the sole dependent variable (Sewell, 1971; Jencks et al., 1983; Schonert, Elliott, & Bills, 1991). In most respects the theoretical frameworks of the educational attainment studies do not differ substantively or structurally from the models used in occupational attainment research. (Compare, for example, Sewell et al., 1970; Otto & Haller, 1979; Jencks et al., 1983; with Williams, 1972; Conklin & Dailey, 1981; Carpenter & Western, 1984.) The paradigms of both types of research are derivatives of the original status attainment (Blau & Duncan, 1967) and Wisconsin (Sewell & Shah, 1967) models.

Following this convention, Sewell (1971) utilized follow-up data in 1964 on approximately 9,000 male and female students from the original 1957 Wisconsin study in order to examine their educational attainments seven years after high school graduation. (For a description of the original survey, see Little, 1958.) By using such measures of socioeconomic status as parental income, father's occupation, and father's and mother's education level, he was able to show that a high SES student, whether male or female, had almost 2.5 times as much chance as a low SES student of continuing in some kind of post-high school education (p. 795). He also found that when SES and academic ability (standardized test scores) were controlled, women had a lower probability than men of obtaining further education (p. 796).

Other findings were that 75% of the effects of the SES variable on educational attainment were mediated by three intervening variables. They were high school performance (academic achievement), significant others influence, and educational and occupational aspirations (p. 799). The latter intervening variables--educational and occupational aspirations--accounted for 38% of the variance in educational attainment (p. 799). In terms of the influence of significant others (defined as parental and teachers' encouragement, and educational plans of friends), the study found that the influence of parents on participation in higher education was nearly twice that of teachers and that the influence of friends was only slightly less than that of parents (p. 800). In terms of the differential in educational attainment between males and females, the findings showed that while females got better grades than males in high school, they were disadvantaged in obtaining further education. The data suggested that parents were more likely to encourage their sons rather than their daughters to aspire to higher education and that family funds were more likely to be spent on the son's education (p. 804).

Parental encouragement was the focus of a study by Conklin and Dailey (1981) using longitudinal data on 1,686 high school graduates in New York State in 1971, six months after their expected graduation. Previous surveys on the cohort (original n = 2,700) were conducted in 1967, 1968, and 1970. Independent variables included gender, father's and mother's education, father's occupation, family size, intelligence percentile ranking, educational expectations, grade ten curriculum, peer college plans, and educational advice from a counsellor. The dependent variable was postsecondary education activity. By use of regression analysis, the study found that parental encouragement over the four-year high school period was positively related to postsecondary education activity (p. 261). The longer that students perceived their parents to take it for granted that their children would go on to higher education, the more likely it was that students would enter college (p. 261). Unlike most other educational attainment studies, Conklin and Dailey (1981) did not classify any of their independent variables as endogenous.

In Australia, a number of studies examined the transition of youth from high school to postsecondary education using causal models that incorporated the social psychological variables typically used in American studies. Elsworth and Day (1983) used administrative and cross-sectional survey data on 19,554 students who in 1979 "had applied to commence tertiary study on the basis of a completed Higher School Certificate (HSC)" (p. 66). The dependent variable was actual commencement of study in 1980. Independent variables included gender, rural or urban background, type of school attended, science or non-science course in the final year of secondary school, and final examination marks. There was one intervening variable, namely, an offer of acceptance to a college or university. Direct, indirect, and total effects were calculated to determine the predictors of educational attainment. Significant determinants of higher education commencement were found to be final examination marks, being female, coming from an urban area, and having taken science courses in the final year of high school (pp. 73-75). They concluded that group inequalities investigated in their study (gender, rurality, and type of school) were smaller than the effects of individual achievements (p. 76). In other words, the ascribed influences were less predictive of participation in postsecondary education than were the meritocratic or achievement influences (science course enrolments and final examination results).

Carpenter and Western (1984) also examined social psychological variables in a more complex model which linked social origins to educational attainment. In their study, five sets of intervening variables were hypothesized to mediate the effects of social origin variables on the criterion variable, higher education entrance. They included (a) schooling factors such as type of school attended and interest in school, (b) influence of significant others, (c) academic self-assessment, (d) educational aspirations, and (e) academic achievement as measured by grade 12 final examination results. Direct, indirect, and total effects of the independent variables were calculated to estimate their influence on participation in higher education. Separate analyses were carried out for males and females. Data from 1978 on approximately 1,300 grade 12 students in Queensland secondary schools who were subjects in a longitudinal study to examine transition from school to work provided information on most of the independent variables. Information on year 12 academic results and admission to higher education institutions was obtained in 1979 from appropriate administrative sources.

Findings from the study showed that the effects of some of the variables on participation differed for males and females. Statistically significant predictors (total effects) in favour of females were urban residence (coming from an urban location), friends' plans, aspirations, and academic self-assessment (p. 266). Only perceived parental influence favoured males (a standardized regression coefficient of .322 compared with .221 for females). Predictors which were similar to both sexes included perceived teacher influence and academic achievement (p. 266). An important finding in this Australian study which differed from comparable American studies (Alexander, Eckland, & Griffin, 1975; Wilson & Portes, 1975) was the influence of educational aspirations. Where the American studies had found aspiration to hold only modest predictive power for educational attainment, findings from Carpenter and Western's study (1984) indicated that aspiration had a substantial influence in determining entrance to higher education accounting for over 25% of the variance in educational attainment (p. 268).

Several other studies in Australia have focused directly or indirectly on educational attainment using social psychological models which followed the traditional Wisconsin model. Carpenter and Fleishman (1987) examined factors (using the Queensland data set described above) that influenced the attitudes and behaviour of high school seniors regarding their plans to attend and their actual entry into college. Harvey (1985) studied 80 students from a single high school in Perth, Western Australia, concerning their preferences for continuing on to further education after high school graduation. Saha (1982) utilized a 1973 national sample of 2,135 urban school leavers to assess their future plans about educational and occupational aspirations. Williams, Batten, Girling-Butcher, and Clancy (1980, 1981) and Williams (1987) comprehensively examined as dependent variables such issues as high school achievement, aspirations, high school attainment, and postsecondary attainment as part of a national longitudinal study of the transition of Australian youth from school to work. Karmel (1983), Marsh (1984), and Carpenter and Hayden (1985) used either national data (Karmel), regional data (Carpenter & Hayden), or city data (Marsh) to examine the effects of social origin variables and social psychological mediating variables on either self-concept (Karmel), academic achievement (Carpenter & Hayden), or education and employment (Marsh). Results from these studies are reported elsewhere in this chapter. The studies are mentioned here to lend empirical support to the use of social psychological variables in educational attainment research and to the widespread use of the traditional Wisconsin model in such studies.

Educational aspirations as a subset of educational attainment research has been widely studied in the sociological literature in the last 25 years, utilizing as independent variables many of the social psychological factors common to the general educational attainment studies. Pavalko and Bishop (1966) used data on 889 senior high school students in Ontario to test the effects of socioeconomic status, gender, and intelligence on their college plans. They found that the college plans of Canadian high school students were directly related to the socioeconomic status of their families (p. 296) and that the relationship was similar to that found in studies dealing with American high school students (p. 288).

Sewell and Shah (1967) confirmed the latter statement in findings from their study of 10,318 male and female high school seniors in Wisconsin in a 1964 follow-up to the original 1957 Wisconsin study reported earlier in this chapter. They found that socioeconomic status, intelligence, and parental encouragement were independently related to college plans (p. 570) and that parental encouragement, while a strong predictor of educational aspiration for students from both low and high socioeconomic backgrounds, appeared "to have its strongest effect on the college plans of males and females who score relatively high on intelligence and come from families occupying relatively high socioeconomic positions" (p. 571).

Kandel and Lesser (1969) reaffirmed the strong effects of parental influence, primarily the mother's, on educational plans of adolescents in a 1965 study of 2,327 male and female students from three high schools in the eastern United States. Both mothers and students were surveyed via self-administered structured questionnaires and asked parallel questions about the adolescents' educational plans. The study showed that the students' educational goals were more concordant with their respective mother's expectations for them than with the expectations of their best friend (p. 221). Further, the mother's expectations were found to be more important direct determinants of the child's educational plans than was socioeconomic status (p. 221).

By contrast, in a 1970 statewide random sample of 3,245 Louisiana high school seniors, Picou and Carter (1976, pp. 20-21) found that peer influence, in terms of a modelling effect, was a stronger predictor of educational aspiration than either parental or teacher encouragement effects on all youth except those in large cities. In the large urban residence category, parental encouragement had a greater impact on aspirations. Categories of residence included rural-farm, rural non-farm, village, small city, and large city.

Other American studies on educational aspiration tested for differences related to race (Kerckhoff & Campbell, 1977; Featherman, 1971; Hout & Morgan, 1975; Grant & Sleeter, 1988), gender (Rosen & Aneshensel, 1978; Danziger, 1983; Grant & Sleeter, 1988) and self-concept (Reitzes & Mutran, 1980). In all cases but one (Grant & Sleeter, 1988), survey data on high school seniors, utilizing social psychological variables, provided the information for the studies. The exception was an ethnographic study conducted over three years with 24 junior high school students in a midwestern city beginning in 1980. General results from the various studies showed that white students held higher educational expectations (Grant & Sleeter, 1988; Kerckhoff & Campbell, 1977) than black students, that gender differentials in aspirations favoured males, seemingly in part because of the limited occupational opportunities that females perceived were available to them (Rosen & Aneshensel, 1978; Danziger, 1983), and that background characteristics influence academic and occupational self-concepts through past socialization experiences and role modelling behavior (Reitzes & Mutran, 1980).

Similar studies with educational aspirations as the dependent variable were undertaken in Australia. For results pertaining to family influence, see LeClair (1988); self-concept, Carpenter and Western (1982); and gender, Carpenter and Fleishman (1987), Saha (1982), and Russell and Smith (1979).

Educational Attainment Research in Canada

As with American and Australian educational attainment research, Canadian research has primarily been undertaken by sociologists, and prior to the 1980s, was largely conducted in Ontario. As with similar studies elsewhere, Canadian research has utilized local, regional, or provincial cross-sectional survey and longitudinal data. Only rarely, with the exception of Statistics Canada surveys, have national studies on educational attainment been done.

Longitudinal studies that were conducted (Williams, 1972; Harvey & Kalwa, 1983; Sharpe & Spain, 1991; Krahn & Lowe, 1988, 1991) were designed primarily to track the labour market outcomes of young people following their high school or college graduation.

The first national study which examined educational attainment was undertaken by a consortium of researchers from three universities in Ontario in cooperation with Statistics Canada. (See Boyd et al., 1985.) It was called the Canadian Mobility Study and was designed primarily to examine occupational mobility in Canada and the process of occupational attainment. The study surveyed approximately 45,000 young people in 1973 from all 10 provinces who were age 18 or over and not full-time students. Information was obtained on respondents' educational and post-high school training status, family background, parental occupation and education, and respondents' occupational status and job experience. Among the major findings related to the educational attainment of the respondents were that coming from a large family reduced educational attainment (p. 207), that the effect of education was nearly three times greater than the effect of first job on current occupational status (p. 133), that the level of educational attainment was virtually the same for males and females, although fewer females had gone to university (p. 243), and that educational attainment was positively associated with family origin (p. 519).

A second national social mobility study was conducted in 1986 as part of Statistics Canada's General Social Survey Analysis Series. (See Creese, Guppy,

& Meissner, 1991.) Educational attainment was examined in terms of its role in social mobility and status attainment among Canadian women and men. The study found that the gender of the respondents or their parents accounted for little difference in educational mobility, but that women were more likely than men to inherit the educational status of their mother (p. 57). It also showed that educational attainment in Canada was rising; only 16% of parents had at least some postsecondary education compared with 43% of their children (p. 57). In terms of education and labour market performance, the study found that a person's first job was principally influenced by their level of education and that women in the labour force had a higher average number of years of schooling than did men (p. 69).

An early exception to social mobility surveys in terms of a national study was Breton's (1972) survey of 145,817 high school students (grades 9-13) in relation to their career aspirations, notably educational intentions and occupational preferences. Independent variables included community size, family size, significant others, program of study in high school, guidance services in school, academic performance, and academic attainment, among others. The study reported that the larger the community of residence, the greater the likelihood of higher education intentions (p. 185); students in academic programs had higher intentions than those in vocational programs (p. 199); parents and teachers were the most important sources of encouragement for educational aspirations and support from friends the least important (p. 388); and the less a student knew about guidance services available in the school and the less consultation there was with counsellors, the more likely it was that students would have low educational aspirations (p. 391).

An early exception in terms of longitudinal data, which characterized the sources of information on educational studies in the U.S. and Australia, was a study by Williams (1972) of Ontario youth. Data on approximately 3,700 grade 12 students who were enrolled in general academic programs were analyzed to compare the changes in educational aspirations over time. The sample was randomly selected from 25,000 grade 12 students in an original cohort of nearly 90,000 enrolled in grade 9 in 1959-60 who were surveyed at that time and each year until graduation from grade 13 five years later. A theoretical model utilizing social background exogenous variables and social psychological endogenous variables in the Blau and Duncan (1967) and Wisconsin model traditions was tested through use of multiple regression and path analysis. (See Sewell, Haller, & Portes, 1969.) A comparison was made between students' aspirations in grade 10 and their aspirations in grade 12. The findings showed that at both time periods, the influence of parents was substantially more effective on students' educational goals, both male and female, than the influence of peers, and that teachers' influence was moderate by comparison with that of parents but still greater than the influence exerted by peers (pp.124 and 130). Correlations between the influence of parents, teachers, and peers on students' educational aspirations were .63, .22, and .06 respectively (p. 124).

A similar but smaller study in Newfoundland, in which Williams was a co-researcher, was conducted using data on grade 11 high school students from school years 1972-73 and 1973-74. (See Parsons, 1974.) While information on many tangential issues was collected, the primary objective of the study was to assess the aspirations of potential high school graduates to attend university in the year following grade 11. A social psychological model in the Wisconsin tradition was employed and independent variables were categorized according to personal, family, school, or community factors with significant others and self-concept variables structured as intervening variables. Findings were reported for males and females in order to assess gender differences. In both groups, the major determinants of postsecondary aspirations were socioeconomic--family income, father's occupation and level of education, and employment history (p. 196). Knowledge of postsecondary institutions contributed positively to postsecondary intentions as did positive perceptions of job opportunities following high school graduation and perceptions of the availability of student loans (p. 197). The converse was found to also be true. That is, low postsecondary aspirations were attributable to lack of adequate finances, low motivation and encouragement, and, especially in rural areas, lack of career information about educational alternatives and options, course offerings in postsecondary institutions, entrance requirements, and the general social and academic environments of postsecondary institutions (p. 199).

A regional municipal study in Ontario (O'Neill, 1981) tested the effects of residential locale on the educational aspirations of 7,500 grade 12 students who were surveyed during the fall and early winter of the 1975-76 school year. Residential settings included rural-farm, rural non-farm, village, small-town, and large city, a classification similar to that used by Picou and Carter (1976) in Louisiana. Eight control variables--intelligence, family socioeconomic status, sex, school peer group, parental expectations, family size, family position (sibling order of birth), and citification (visits to a large city)--were included in the linear regression model. The results indicated that residential locale accounted for only a small proportion of the variance (.013) in educational aspiration (p. 58). As a group, rural non-farm students had the highest levels of postsecondary aspiration and rural-farm and village students the lowest (p. 58). Control variables found to be statistically significant in their effects on educational aspirations included sex (in favour of females), peer influence, and parental expectations (p. 62). Because the study did not compare parental encouragement with peer influence, a comparison cannot be made with the Louisiana study (Picou & Carter, 1976) which found peer modelling to be most influential on aspiration in all residential settings except large cities (p. 21).

Multi-regional cross-sectional data were examined by Looker (1993) to compare gender and urban/rural differences in the educational and occupational plans of youth in two Canadian provinces. Approximately 1,200 17-year olds were interviewed, 400 in each of three locales: Hamilton, Ontario; Halifax, Nova

Scotia; and rural Nova Scotia. Parents of the respondents were also surveyed by means of each parent being asked to fill out a questionnaire. Results from the study showed that most of the youth respondents wanted and expected advanced education but that their educational plans were interwoven into their occupational plans and their plans for marriage and a family (p. 64). Young people in urban areas perceived they had more educational and job options available to them than did rural youth. Educational options for rural youth entailed an expectation of having to leave their home communities. "Over 80 percent of rural youth who planned to attend university and 69 percent of those who planned some other post-secondary education expected to leave" (p. 57). For women, career plans entailed an expectation that family and child responsibilities would interrupt their career progress. Most of them "planned major investments of time in post-secondary education and many wanted and expected high status, professional or semi-professional jobs, yet they intended to take several years out of their careers for child rearing" (p. 53). Male youth, on the other hand, did not see a comparable interruption to their career plans.

Cross-sectional local data were used to investigate changes in high school student plans and aspirations over a 12-year period in Edmonton (Friesen, 1983). Students in grades 9-12 in 1969 (n = 12,951) completed a questionnaire entitled "Student Values Inventory." The same questionnaire was administered in 1981 to students in grades 9-12 from the same school system (n = 2,285) and the results compared. The proportion of males and females in both studies was

50%. Results indicated that 9.2% more females in 1981 aspired to a university degree than in 1969 whereas a 2.4% decrease in expectation was recorded for males (p. 288), An increase in expectation to enrol in a technical institute was recorded for both males and females in 1981 over 1969--9.3% for males and 12.1% for females (p. 289). This study is a departure from the more common kinds of educational attainment studies completed in Canada in that the effects of exogenous or endogenous variables on aspiration were not tested.

National data from Statistics Canada (Canadian Mobility Study, 1973) was analyzed by Guppy (1984) in another non-traditional educational attainment study. He compared attendance and graduation rates from postsecondary education programs in Canada between the 1920s and 1970s by gender, language group, and socioeconomic background. His main findings were that an overall reduction in educational disparities had occurred at the postsecondary level for all three categories in terms of general participation rates, but that they still existed in terms of university degree attainment for females and for students from lower socioeconomic backgrounds (p. 88).

Similar postsecondary access studies in Canada were undertaken earlier by other researchers. Harvey (1977) compared national samples of postsecondary students from 1968-69 (n = 352,000, approx.) and 1974-75 (n = 452,000, approx.) to assess trends in enrollment patterns by gender and socioeconomic background. His findings for these two variables were similar to those found later by Guppy (1984) above. For example, over the six-year period, enrollment in the least prestigious college programs by students whose fathers had low educational attainment increased by 7.2% while enrollment by students whose fathers had a high level of educational attainment declined by 7.2% (p. 11). Anisef, Okihiro, and James (1982) used 1971 and 1973 census data to examine participation in postsecondary education in Ontario. While women and ethnic groups showed increased rates of participation, disparities in enrolments still existed for groups from different socioeconomic and residential backgrounds, findings confirmed later by Guppy (see above) at the national level. (See also O'Neill, 1981; Pike, 1970; Turrittin, Anisef, & Mackinnon, 1983.)

A comparable but later study by Pineo and Goyder (1988) compared Canadian secondary, postsecondary, and post-graduate participation rates with those of the United States. They utilized data from the 1976 and 1981 censuses and the Canadian Mobility Study to determine participation rates by age, gender, family socioeconomic status, community of residence, ethnicity and religion. Their main findings were that in both Canada and the U.S., social background factors peak in the earliest years of school and diminish in effect thereafter and that sociological factors (retention rates in secondary school, gender, post-graduate participation, age, community/region, ethnicity/religion) play a bigger role in determining educational attainment in Canada than in the United States (p. 51).

Educational attainment within higher education was the focus of a study by Guppy and Pendakur (1989). They utilized national data from Statistics

Canada to examine changes in patterns of participation between men and women in the 10-year period from 1974-75 to 1983-84, and between students from more educated families with those from less well-educated families. Dependent variables included (a) full-time vs. part-time study, (b) college vs. university study, and (c) fields of study in university. Data pertained to students who were registered in Canadian colleges and universities in 1974-75 and 1983-84. Ontario was used as a reference region for comparison purposes. The main finding from the study was that socioeconomic status, as measured by parental education, was strongly related to postsecondary education registration and type of institution attended but had less influence on field of study (p. 59). Women from families with lower than average education studied full-time less frequently than men and women from more educated families, and women in university studies were more likely than their male peers to come from well-educated families (p. 60). These findings were similar to those reported by Gaskell (1987), Guppy (1988), and Guppy, Mikicich, and Pendakur (1984).

The preceding discussion on status attainment research explained that educational attainment studies in essence emanated from sociological studies on occupational attainment, and adopted their basic research design from the occupational attainment studies. The Wisconsin model of status attainment that incorporated social psychological variables as mediating influences between social origin variables and the dependent variable came to be the established format on which other studies were modelled. Data commonly used in educational attainment research were longitudinal in nature, in keeping with the underlying assumption that social psychological processes generate their effects over time (Sharpe & Spain, 1991). Educational attainment studies in Canada had been conducted since the mid-1960s using variations that were typical of the traditional social psychological models employed elsewhere. A sampling of the research compared and contrasted the nature of the studies completed across the country. Findings from such research generally supported the findings of studies conducted in the U.S. and Australia and revealed that social origin factors continued to be strong determinants, directly and indirectly, of both access and attainment to higher education in Canada.

Conceptual Framework

The foregoing discussion on status attainment research highlighted the focus given in the studies to a number of social psychological variables to examine the relationship between social origins and subsequent educational attainment. Models that were developed to describe the linear relationships between variables stemmed from the Blau and Duncan (1967) model of occupational attainment.

Criticisms of this model (Kerckhoff, 1976; Alexander & Cook, 1979; Featherman, 1981; Beilby, 1981) prompted the development of more complex models of the educational and occupational status attainment process. The object was in part to compensate for the perceived deficiencies in the basic model, deficiencies which were seen by Carpenter and Hayden (1985) to largely be in the "omission of a number of important social psychological factors which prior research had indicated were intervening variables between social origins and status attainments" (p. 200). Subsequently, whereas Blau and Duncan (1967) had included only father's education and occupation as exogenous variables, later models incorporated such variables as mother's education and parental income (Sewell, 1971); gender, family size, and intelligence (Conklin & Dailey, 1981); and rural/urban, high school curriculum, and type of school (Elsworth & Day, 1983).

Endogenous or intervening variables examined by Blau and Duncan included educational attainment and respondents' first job. In later derivatives of the model, variables such as the influence of significant others, self-concept, aspirations, academic achievement, high school curriculum, and academic attainment were typically included as intervening variables. (See earlier discussion.)

The dependent variable also changed over time. Occupational attainment continued to be a focus of interest, but academic achievement (Carpenter & Hayden, 1985), aspiration (Williams, 1972; Reitzes & Mutran, 1980), educational attainment (Clifton, Williams, & Clancy, 1990, 1991; DeGraaf, 1986), earnings (Jencks et al. 1983), and participation (Hayden & Carpenter, 1990; Williams & Carpenter, 1990) were classified as the criterion variable.

Concurrent with Blau and Duncan (1967) and in later conceptual frameworks, the status attainment model developed by Sewell and Shah (1967), which came to be known as the Wisconsin Model, dominated the research literature. It supplanted the Blau and Duncan (1967) model as the standard in educational attainment studies (Picou & Carter, 1976) even though in essence the two models were structurally similar. The difference in the Wisconsin model was in the nature of the variables. For example, (a) it incorporated intelligence in the list of exogenous variables, (b) socioeconomic status remained as an exogenous variable but was expanded to include father's occupation, father's and mother's formal educational levels, parental financial support for children to attend college, degree of sacrifice such financial support would entail, and family income, (c) only one endogenous variable was included in the model, namely, parental encouragement which was defined as respondents' perceptions of their parents' attitudes towards their college plans, and (d) the dependent variable was college plans. Subsequent educational attainment studies essentially elaborated on this model by either increasing the number and kind of exogenous and endogenous variables, reordering the causal paths of the independent variables, increasing the number of causal paths, or adopting different dependent or criterion variables.

The overwhelming use in the literature of the status attainment model for assessing social psychological influences on educational attainment prompted the adoption of a similar model for this study. Other models were possible but were not considered largely because of the inherent constraints placed on the study by the nature of the primary data source. Further, the study was exploratory in nature. No other study on postsecondary participation had ever been undertaken in Newfoundland that incorporated the social psychological variables that were selected for this study. The closest one that did was focused primarily on aspirations of grade 11 high school students where a status attainment model had been used to guide the development of the study. (See Parsons, 1974.)

Several constraints imposed by the survey data limited the use of other models. First, the study used variables from a pre-determined study (Youth Transition into the Labour Market or YTLM) that had not specifically been designed to gather information solely on participation in postsecondary education. As mentioned in Chapter 3, the intent had been to gather descriptive data on the general experiences of Newfoundland youth since they left high school in June, 1989 in order to document their statuses at various points in time. The YTLM study was essentially a status attainment study. Second, many of the variables in the YTLM survey data sets were sociological and psychological in nature which readily lent themselves to a status attainment framework that was comparable to those found in the sociological literature on occupational or educational attainment. Third, the data were aggregated to the level of the individual rather than to specific groups such as grades or to units such as the school. The limited information available in the data on school variables precluded a school-based model similar to paradigms used in the school effectiveness literature. (See Edmonds, 1982; Good & Grouws, 1979; Rutter et al., 1979.)

The exploratory nature of the study was bounded by its purpose which was to identify categories of variables that were believed to influence participation in postsecondary education in Newfoundland. By focusing on personal, family, school, and community variables, it was hoped to identify indicators over a broad spectrum that had specific kinds of effects on participation, e.g., those that inhibited participation, promoted participation, or enhanced participation. The expectation was that follow-up studies would probe each of those categories in-depth once the specific areas of effects were identified. More customized models that would not necessarily use survey data could be adopted that would be more appropriate to the narrower foci of those studies.

The model that was subsequently developed to guide this study is shown in Figure 2.1. It follows the conventions established in antecedent models in the Blau and Duncan (1967) and Wisconsin Model (Sewell & Shah, 1967) traditions, with the exception that an SES variable which is so common in other status attainment research was not included in this model. (See p. 58.) However, several of the background variables are essentially socioeconomic variables, e.g., well-being, career plans, value of education, family size, and advanced mathematics. It assumes that personal status variables, selected family status variables, school resource variables, and community context variables are all exogenous variables. The model also assumes that academic achievement, high school graduation, vocational self-concept, the influence of significant others, and barriers are all intervening variables that mediate the effects of the exogenous variables on the criterion variable, participation in postsecondary education. That is, generally the effects of the personal, family, school, and community variables affect the educational achievement and attainment of respondents, that they influence the vocational self-concept and the perception of significant others' influences on respondents' personal choices, and they often act as barriers, perceived or structural, to eventual participation in postsecondary education. In quantitative terms, the model is a series of structural equations in which the parameters of the variables are estimated from correlational matrices or partial regression coefficients. It is additive in nature in that the effects of the exogenous and endogenous variables combine directly and indirectly to affect the probability that a young person will participate in postsecondary education. (See Hayden & Carpenter, 1990.)

The selection and causal ordering of the variables as depicted in Figure 2.1 is partly due to the patterns traditionally found in the literature and partly to hypotheses. Common exogenous variables appearing in educational attainment models have included family size, normally measured as the number of siblings (Rosen & Aneshensel, 1978; O'Neill, 1981); sex or gender (Clifton et al., 1991; Reitzes & Mutran, 1980; Carpenter & Western, 1982; and Williams & Carpenter, 1990), rurality, often denoted as rural/urban or residence status (Williams, 1987; Picou & Carter, 1976; Grant & Sleeter, 1988), and region (Williams & Carpenter, 1990). Exogenous variables which appear but are not so

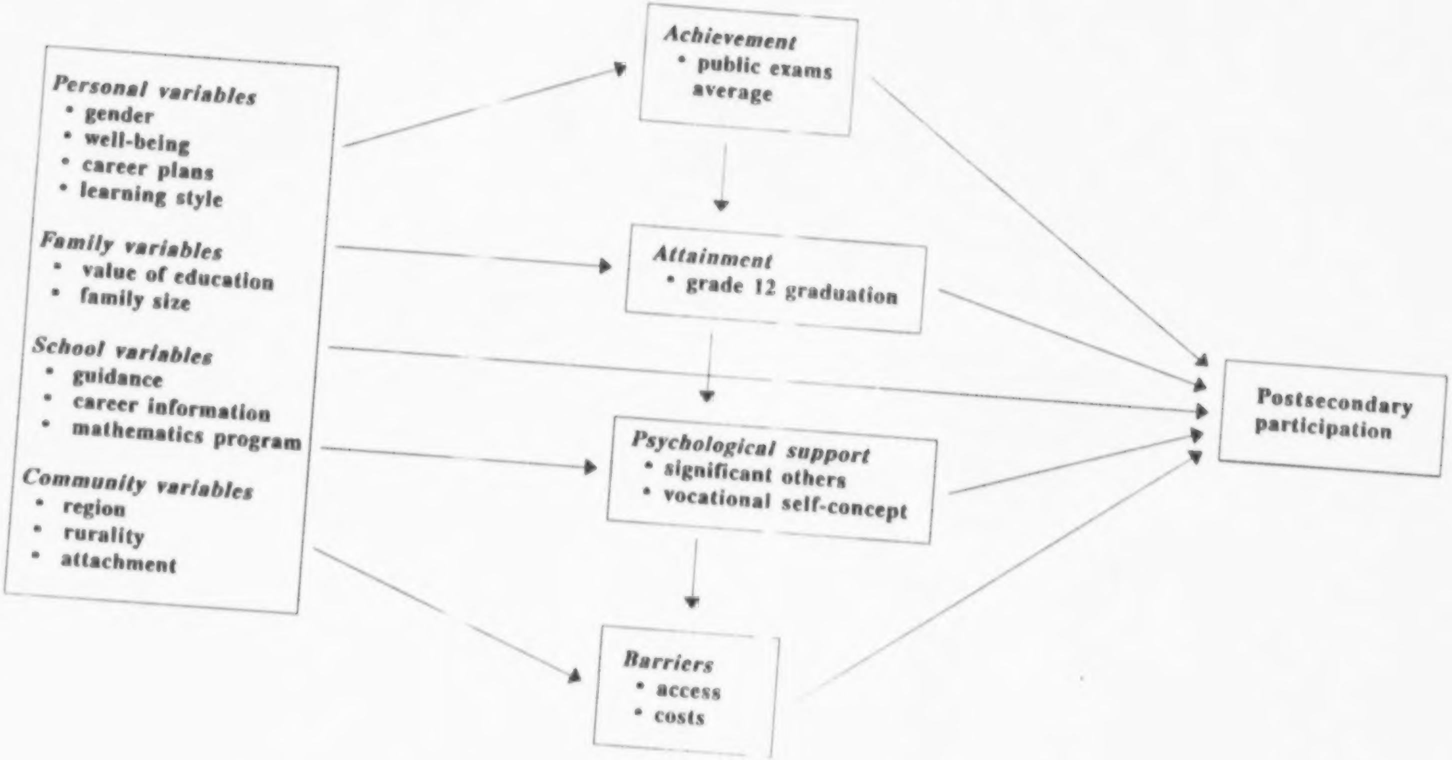
Personal variables
• gender
• well-being
• career plans
• learning style
Family variables
• value of education
• family size
School variables
• guidance
• career information
• mathematics program
Community variables
• region
• rurality
• attachment
Achievement
• public exams average
Attainment
• grade 12 graduation
Psychological support
• significant others
• vocational self-concept
Barriers
• access
• costs
Postsecondary participation

Figure 2.1 Theoretical Model of Postsecondary Participation

Source: A derivative of models developed by Williams (1987) and Clifton, Williams, and Clancy (1990)

common--they are more typically treated as endogenous variables--are high school grades (Reitzes & Mutran, 1980; Williams, 1987; Clifton et al., 1990, 1991), significant others (Williams, 1972; Reitzes & Mutran, 1980), high school curriculum (Gilbert & McRoberts, 1977; Elsworth & Day, 1983; Turrittin et al., 1983), and aspiration or career plans (Conklin & Dailey, 1981; Carpenter et al., 1980; Punch & Sheridan, 1978).

The most common exogenous variable which appeared virtually in every model was socioeconomic status, measured invariably by father's occupation and education, mother's level of education, or family income (Carpenter & Western, 1982, 1984; Conklin & Dailey, 1981; Otto & Haller, 1979; Carpenter & Fleishman, 1987). An SES variable was not constructed for this study because the variables that would have given some credence to a measure of socioeconomic status in Newfoundland, namely father's education and mother's education, were not available in the data used for the study. Father's occupation was available as a partial measure but was rejected for its perceived unreliability as a measure in the Newfoundland context. Newfoundland society is generally rural but the distinction is not clear because of the large numbers of people who are proximal to an urban or semi-urban area. They often work in an urban environment but live in a rural environment, are employed seasonally or experience short periods of employment followed by long periods of unemployment (Sharpe & Spain, 1991). The occupations which many Newfoundlanders are engaged in do not generally fit neatly into the categories described in the Canadian Classification and Directory of Occupations (CCDO). (See Employment and Immigration Canada, 1987.) Further, information was not available on family income or family wealth which could have been used to aid in the construction of an SES variable. For all these reasons, it was considered prudent not to include SES as an exogenous variable in this study.

A number of common endogenous variables appeared in educational attainment models which utilize postsecondary participation as the dependent variable. Typically hypothesized to mediate between the exogenous variables and the criterion variable are educational or academic achievement, sometimes measured as performance on literacy and numeracy tests (Clifton et al., 1991) but more commonly denoted by average marks obtained in grade 12 final examinations (Carpenter & Western, 1984; Williams, 1987); the influence of significant others, usually parents, teachers, and peers (Williams & Carpenter, 1990; Schonert, et al., 1991); educational attainment, usually measured as completion of grade 12 when used as an endogenous variable (Elsworth & Day, 1983; Williams & Carpenter, 1990); self-concept, usually of ability (Marsh, Parker, & Smith, 1983) but also incorporating self-esteem (Maruyama, Rubin, & Kingsbury, 1981; Zuckerman, 1985) and occupational expectations (Marsh, 1984).

The causal ordering of exogenous variables in the educational attainment models was generally random. Where consistency did appear, it was coincidental with reference to father's education and occupational status. Otherwise, the placement of the variables was unordered. The ordering of the endogenous variables was more systematized but often was idiosyncratic to the particular researchers. For example, Gilbert and McRoberts (1977) chose self-concept of ability, educational achievement, family influence through mother's expectations, and high school program for the order of causal effects. Porter, Porter and Blishen (1973, 1979, 1982) in their 1971 study of Ontario students and Turrittin et al. (1983), while including the same endogenous variables in their model, hypothesized the causal ordering to be high school program, academic achievements, influence of significant others, and self-concept of ability even though the definition of the variables were essentially the same (Turrittin et al., 1983, p. 401). Such differences in the causal ordering of endogenous variables or in the selection of a particular variable, e.g., aspiration, as either an exogenous or endogenous variable can be attributable to the hypothesized nature of status attainment models. They are not fully recursive (unidirectional) because the effects of many of the variables are reciprocal. That is, high school grades could influence aspiration and vice versa, as could choice of high school curriculum on academic achievement, and vice versa. (See Jencks et al., (1983) and Cook and Alexander (1980) for a discussion of non-recursive models.)

The Theoretical Model

As a consequence of both the conventional nature of status attainment models and the largely idiosyncratic governance of the causal ordering and selection of exogenous and endogenous variables, the model shown in Figure 2.1 displays characteristics of both convention and idiosyncrasy. The path model assumes linearity in the effects of the exogenous and endogenous variables on the criterion variable and hypothesizes that the effects of the exogenous variables are both direct and indirect. That is, the exogenous variables independently influence participation in postsecondary education. At the same time, however, their effects are also transmitted through one or more of the five intervening variables so that the total effects on participation are due both to the direct effects of the exogenous variables, and to their indirect effects as precipitated by the endogenous variables.

Exogenous Variables

An underlying assumption of the model is that the effects of the personal and contextual variables are combined and additively determine which of the respondents are likely to continue on to higher education once they have completed their secondary schooling. This assumption found widespread support in the occupational and educational attainment studies previously cited. MacKinnon and Anisef (1979, p. 317) in their study of approximately 2,000 Ontario grade 12 students, six years after high school graduation concluded that "both subjective [self-concept of ability, significant others influence, aspirations] and objective [mental ability, gender, rural/urban, academic performance] factors play significant roles in the status attainment process."

Four sets of variables are proposed in the model, each with two or more subsets. The assumption is made that the processes leading ultimately to postsecondary participation first begin with the individual and are influenced progressively by family, school, and community. Yet, reciprocal relationships are recognized to be part of the process. There is no causal ordering posited in the subsets of the "group" variables. Consequently, the personal variables examined in the study are disaggregated into Gender, Well-being, Career Plans, and Learning Style without any consideration to the order of their influences on Participation. Collectively they represent the personal resources that the individual brings to bear on later educational choice. Russell, Cahill, and Spain (1992, p. 7) suggested in reference to labour market participation that "each person has a set of attributes that include their abilities, both intellectual and physical, their temperament and personality, the skills that they have learned and their values. These attributes are, in effect, the ‘capital’ that the individual offers in the labour market."

Gender has implicitly been regarded as an asset, almost always in favour of males, in status attainment studies. Conventional wisdom suggests that males generally aspired to and obtained the more prestigious and better paying jobs, have had greater mentorship support and a larger number of role models from which to draw inspiration, usually have been encouraged by their parents to pursue high occupational goals and have generally been looked upon as the ones to receive more financial help from the family in the pursuit of these career goals. On the other hand, being female has been generally regarded in the research literature as being less of an asset in educational or occupational attainment for the opposite reasons as the positive effects and benefits cited above which accrue to males.

In recent years, however, females have been attending postsecondary institutions in slightly larger numbers than have males, have been obtaining better grades in high school subjects, including science, than their male counterparts, and have been aspiring to and entering the higher paying and more prestigious occupations that were traditionally in the exclusive domain of males. Inequalities for females still exist, especially in terms of program choice in college and universities (Guppy & Pendakur, 1989; Wilson, 1991), in earnings once they enter the labour market (Ornstein, 1983; Fitzgerald, 1986), and in their career progress (Looker, 1993; Mandell & Crysdale, 1993). But, as a resource for participation in postsecondary education, being female was hypothesized in this study to be a greater asset than being male. The expectation was that more females than males are likely to go on to higher education following high school graduation thereby perpetuating the pattern which has persisted in Canada and elsewhere during the last two decades. Learning style was included as an exogenous variable because of its application to coping with postsecondary academic demands. Four categories of learning style were present in the data which ranged on a continuum from learning by strictly independent methods to learning by helping someone do the job. It was hypothesized that independent learning would be the best predictor of postsecondary participation because it would be most congruent with the learning and study requirements expected at the postsecondary level, especially in university and technical programs. Traditionally, the concept of university and technical education was associated with minimal hands-on learning and tended more to reflect theoretical and abstract conceptions than practical orientations (O'Neill, 1981, p. 6). A student who preferred to learn independently from books as opposed to demonstrative or experiential methods was anticipated to be able to adjust more easily to postsecondary teaching and learning methods.

The variable, Educational Plans, specifically pertained to entry into postsecondary education. It was defined as the respondents' anticipated plans in life regarding education and likely occupation. Most of the studies which included educational plans structured it either as an endogenous variable or as the criterion variable under the rubric of aspirations. It was used in this study as an exogenous variable because of the assumption that it is a personal asset that contributes directly to participation in postsecondary education. Additionally, because of the generally accepted view that social psychological variables have reciprocal effects (Williams, 1972; Jencks et al., 1983) i.e., mutually causative, there was nothing except convention to preclude the placement of educational plans as an exogenous variable.

The process by which plans are formed was not a concern in this study and as such, discussion of theories relating to such development was considered to be unnecessary. At issue here is the extent to which planning to attend postsecondary education influences actual participation. Much of the literature referred to planning in terms of career choice or occupational preference which has direct relevance to this study in that postsecondary educational attainment is often a prerequisite to the attainment of a particular occupation. Findings from contemporary research show that a high level of indecision regarding choice of a career predominates in North America (Breton, 1972; Fottler & Bain, 1984; Empson-Warner & Krahn, 1990). Many of the young people interviewed for this study indicated that a major reason for their not going on to further education after high school was the lack of a clear career direction and an unwillingness to borrow money via student loans until they knew what they wanted to do.

Studies which examined educational aspiration or career plans as an endogenous variable (Sewell, 1971; Conklin & Dailey, 1981; Carpenter & Western, 1982, 1984; Otto & Haller, 1979) found that it substantially influenced educational attainment, accounting for as much as 25% (Carpenter & Western, 1984) to 38% (Sewell, 1971) of the variance in educational attainment. Several studies found that levels of educational and occupational aspiration were lower among females than males (Hoffman, 1972; Rosen & Aneshensel, 1978; Marini & Greenberger, 1978), while others found little difference (Carpenter, Western, & Foster, 1980; Turrittin et al., 1983) or no difference (Treiman & Terrel, 1975; Danziger, 1983). Punch and Sheridan (1978, p. 182) found that the career plans of male students in secondary school were more predictable than those of female students. For both sexes, according to Carpenter et al., (1980, p. 41), educational plans to attend higher education were important predictors of actual attendance.

The point of interest in the educational attainment research was the extent to which career plans influenced subsequent attainment. The manner in which the variable exerted its influence has been studied less, according to Saha (1982, p. 248). Alexander and Cook (1979, p. 210) looked upon career plans as only a rough sketch of what young people intended to do but suggested that such plans were not necessarily unrealistic nor were they based on fantasy. Their own findings were that students who had firmed up their career plans early in life had higher levels of educational attainment (p. 213).

The current study hypothesized that the more attention the survey respondents gave to their career planning, the greater was the likelihood that they would continue on to postsecondary education, and vice versa. Variables in the data selected for this linear composite pertained to whether respondents planned to start their own business, if they planned to continue with postsecondary education after high school, and how much education beyond high school they planned to have at the end of a five-year period. In some cases, the selection of "I have no plans" as a question choice indicated a low level of aspiration and was included in the construction of the composite on that assumption. (See Chapter 4.)

The variable, Well-being, was not found to have been examined in any of the status attainment studies. Consequently, it was a new entry into the social psychological models of educational attainment. Well-being was defined in the study as the absence of anxiety in the respondents' lives and their satisfaction with life generally. The career development literature on personal anxiety and rational decision-making showed the two variables to be substantially interrelated. Harren (1979), Super (1980), and Blustein (1987) all found that rational decision-making was central to effective career development. Hartman, Fuqua, and Blum (1985) and Fuqua and Seaworth (1987) found that the more anxious young people were about specific life situations (as measured on published anxiety scales) the greater were their measures of career indecision.

Based on these empirical findings that the less anxiety young people had in their lives the more likely they were to make rational decisions regarding their careers, it was hypothesized that the more satisfied respondents were with life generally, and the fewer problems they had getting started in life, the less anxiety they had in their lives. Consequently, the greater was their sense of well-being. In turn, the greater their well-being, the more likely they were to make a rational decision to continue on to postsecondary education after high school. It was mentioned earlier in this chapter that status attainment models were not fully unidirectional because the effects of many of the variables could be reciprocal. This notion applies to the Well-being variable which is inherently reciprocal in nature. That is, the effects could equally apply in reverse, as the above discussion suggests. A greater sense of well-being promotes an absence of anxiety and vice-versa. An absence of anxiety promotes rational decision-making and vice-versa. Rational decision-making could induce participation in postsecondary education and vice-versa. Items from the survey questionnaires that were selected for the composite referred to the degree of respondents' satisfaction with life as a whole, outlook for the future, social life, level of independence, general career outlook, whether life since leaving high school had gone for them as they had expected, and the degree to which they had encountered problems getting started in life.

Two variables, namely, Value of Education and Family Size, comprised the set of family variables in the study. Family size, measured as the number of children in the family, had been examined in numerous studies (Rosen & Aneshensel, 1978; O'Neill, 1981; DeGraaf, 1986; Clifton, Williams, & Clancy, 1991). The hypothesis generally adopted was that large families militated against educational attainment, especially for females, because it reduced the amount of family resources which could be expended on individual family members (DeGraaf, 1986; Williams, 1987). Male children in the family were considered by the parents to be first deserving of scarce family resources because it was more important for them to acquire a good occupation than it was for the female children who would more likely marry and raise their own families (Sewell, 1971; Rosen & Aneshensel, 1978; Porter, Porter, & Blishen, 1973; Danziger, 1983; Williams, 1987).

The variable, Value of Education, usually had been operationalized in previous studies as parental encouragement. The common hypothesis was that the more that children were encouraged to go to college or university, the more likely they were to attend. Findings from studies which examined the effects of parental encouragement on aspirations for higher education generally supported the hypothesis (Conklin & Dailey, 1981; Danziger, 1983; Turrittin et al., 1983).

The effects of encouragement were shown to be more influential on males than females (Turrittin et al., 1983; Williams, 1972; Rosen & Aneshensel, 1978; Carpenter & Fleishman, 1987). The argument generally related to family financial resources, often a function of family size mentioned above. Rosen and Aneshensel (1978, p. 182), who found that family size had a significant direct negative effect on parental educational expectations for their daughters but not for their sons, said that "the strain family size puts on financial resources more strongly affects females, since parents tend to be less willing to allocate scarce resources for the education of girls than boys." Consequently, parents tended less to encourage girls in the family towards a career or lifelong occupation than the boys.

It was hypothesized in this study that the more that higher education was valued in the home, the more likely it was that children in the family would continue their education after high school. The value of education was measured by the extent to which the father and/or mother were perceived by the respondents to want them to continue their education, whether family financial support would be available so they could attend, and whether discussion of educational plans had taken place in the home. These variables are similar to those discussed in other studies (Carpenter & Hayden, 1985; Carpenter & Fleishman, 1987; Lareau, 1987).

Theoretical support for the selection of these variables and for the effects of family influences generally stems primarily from traditional functionalist theory (Schultz, 1961; Collins, 1971, 1979) and cultural capital theory (Bourdieu, 1977a; Halsey, Heath, & Ridge, 1980; Dimaggio, 1982). According to functionalist theory, the association between family background factors and educational attainment was dependent on society's need for highly educated people and on the distribution of financial resources. Where the need for highly educated people was small, family income and family size determined the amount of money that could be used to purchase education. When the need for a better-educated labour force emerged as a result of changing technology, government intervened to assist families with the education of their children by expanding educational facilities and programs and eliminating financial barriers to access (DeGraaf, 1986, p. 237).

Cultural capital theory, on the other hand, focuses internally on the family and on the cultural resources within the family. Bourdieu (1977a, p. 497) proposed that parents transmit their acquired cultural resources to their children. Cultural resources are in the form of the parents' knowledge about the formal requirements of school and in the habits they adopt and the social and intellectual activities they experience with their children such as reading, visits to the library, museums, and the theater. These experiences or resources incline the family favourably towards education. Family cultural resources for the children are transformed into cultural capital which children bring to the school and which facilitates their adjustment to school and to academic achievement. Lareau (1987) tested this theory in a California study of teachers' requests for parental involvement in their children's schooling. Two schools were selected for case study; one serving a working-class community and involving 450 K-2 pupils, and the other serving an upper-middle-class suburban community with 300 pupils in grades K-5. Results of the 1982 study indicated that the response of parents to teachers' requests was much higher at the upper-middle-class school than at the working-class school. Differences in social, cultural, and economic resources between parents from the two schools were concluded to be the cause of the differences in their responses to the teachers' requests to participate in various schooling activities.

The category of school variables consisted of Guidance, Career Information, and the Advanced Mathematics Program in grade 12. Questions on the surveys pertaining to Guidance referred to the availability of guidance services in the high school the respondents attended and whether guidance counsellors were consulted in students' decision-making about careers and further education. Guidance counsellors are as much a part of Canadian education as are teachers and other school personnel, the underlying assumption being that they provide a vital service to students in the education process. Consequently, it is not considered necessary to provide theoretical justification for including guidance as a variable in this study. In Newfoundland education, counsellors have a direct role in career education in that they generally teach or oversee the Career Education 3101 course, supervise occupational inventory assessment programs such as the popular national computer-assisted learning program, Choices, and conduct career counselling and other career-oriented activities in the school.

The influence of Career Information has been shown in previous studies to have a positive effect on higher education participation. (See, for example, Wiseman, 1983; Sharpe & Spain, 1991; Empson-Warner & Krahn, 1990.) Reubans (1981), in a survey of international organizations in Europe--the European Community, the Nordic Council, the OECD, and the Council of Europe--on their positions and activities regarding youth transition from school to work, found that inadequate preparation in the basic competencies related to work, and insufficient acquaintance with the structure of work exacerbated the problems which youth experienced in the transition process (p. 31). Sharpe and Spain (1991, p. 152) found that less than half (n=7,390) of the students in their initial survey of the 1988-89 grade 12 cohort had heard a speaker from or read information about postsecondary institutions in Newfoundland, other than the university. Wiseman (1983, p. 52) had found in his study on the career aspirations of Newfoundland high school students that a knowledge of many sources of information about careers was associated with non-traditional career choices. Parsons (1974, p. 196), in perhaps the most comprehensive study ever undertaken into the career aspirations of Newfoundland youth, found that a knowledge of postsecondary institutions was equally as significant an influence on the postsecondary education decisions of high school students as were socioeconomic factors.

In Australia, Saha (1982, p. 259) showed that career information affected males and females differently. Possession of career knowledge for girls had little direct effect on their career orientations. For boys, however, those who claimed they had less knowledge about careers aspired to higher occupations than boys who had more knowledge.

The choices of occupations to which students aspired in Empson-Warner and Krahn's study (1990) may have been a function of insufficient knowledge about the Canadian labour market structure or about careers in general. The students' aspirations directly conflicted with the distribution of occupations in the workplace in 1981. For example, while approximately 70% of the students aspired to occupations in middle management or higher, only 24% of all jobs in the Canadian labour force at that time were at those levels (p. 14). Such a contrast between aspirations and reality suggested that "many young people were unlikely to realize their occupational goals" (p. 15). More accurate and current knowledge of occupational surpluses or deficits could theoretically have helped them channel their efforts in more realistic directions and towards more attainable goals.

In this study, the hypothesis was that the more information students possessed about careers and educational options, the greater was the likelihood they would participate in postsecondary education. The focus of the questions selected from the surveys for this composite was on knowledge about postsecondary institutions. The underlying assumption was that a knowledge of those institutions--their program offerings, social environments, and entrance requirements--would help the students make decisions about whether to enroll or not.

Advanced Mathematics in grade 12 was chosen as a variable because of the widespread belief in Newfoundland that students who take this course in high school were better able to cope with first year mathematics courses at university and the technical schools. Crocker (1989) provided support for this assumption in his study of mathematics and science education in Newfoundland. An advanced sequence of mathematics courses was available in the first year university mathematics program for students who had taken the Advanced Mathematics course in high school. For students who had taken the perceived weaker Academic Mathematics program in high school, a different sequence was required that entailed a pre-calculus course in term one as a prerequisite to enrollment in Introductory Calculus in term two. Students with the advanced high school mathematics credit could by-pass the prerequisite course and enroll directly in Introductory Calculus in term one (p. 72).

Support for mathematics as a predictor of further educational activity was provided by Jencks et al., (1983, p. 12). In a study of 1,000 non-farm males in the U.S., they found that mathematics scores on a battery of high school tests were the best predictor of educational plans for both males and females. A possible explanation which they proposed was that high school students who understood mathematics and who achieved in it felt they would not need to work as hard as other students to survive in college.

The final set of exogenous variables in the model pertains to Geographical Region, Rural/Urban residency and Community Attachment. The underlying assumption is that students who come from rural and remote areas in the province are more disadvantaged than students who live in larger urban and more accessible and populated regions. Wilson (1991, p. 94) found that Memorial University, the province's only university, during the period from 1983 to 1986, drew its students largely from the region where the main campus was located, namely, the Avalon Peninsula (Region 1), an area that in 1991 contained 45% of the entire Newfoundland population (Statistics Canada, 1992).

Explaining postsecondary participation differences by region is acknowledged to be a difficult exercise. Williams (1987, p. 82) declined to include it as a variable because of the complexity of the subsequent interpretation. Regional differences in participation in education, he thought, could be attributable to the distribution of the population, the nature of the people, the economies of the particular region, the school systems themselves, the presence or otherwise of postsecondary institutions, the degree of unemployment and welfare, proximity to major transportation routes or urban service centres, or the topography of the region which might contribute to isolation or remoteness. The Avalon Peninsula region was selected as the constant in this study, against which other regions were compared (see Figure 2.2), because it contained the largest regional concentration of people in the province. It is the site of the capital city, the largest urban service centre in the province and the focal point for land, sea, and air transportation, and where the major technical colleges in addition to the university are located. The area is accessible from all other parts of the province and has a well-established network of local roads and main highway arteries. It normally experiences higher rates of employment than other regions, and provides a variety of occupational choices not found to the same extent in any of the other urban centres.

There is an extensive literature on the educational disparities and inequalities between rural and urban communities. Findings from empirical research showed that rural youth had lower educational aspirations than urban youth (Schonert et al., 1991; Amodeo, Martin, & Reece, 1983; Williams, 1972), had lower levels of academic achievement (Wilson, 1991; Williams, 1987), participated less in higher education (Williams, 1987; Elsworth & Day, 1983), had weaker self-concepts of ability (Turrittin et al., 1983; Marsh, 1984), and did not bring the same level of cultural capital to the schooling experience (DeGraaf, 1986; Lareau, 1987).

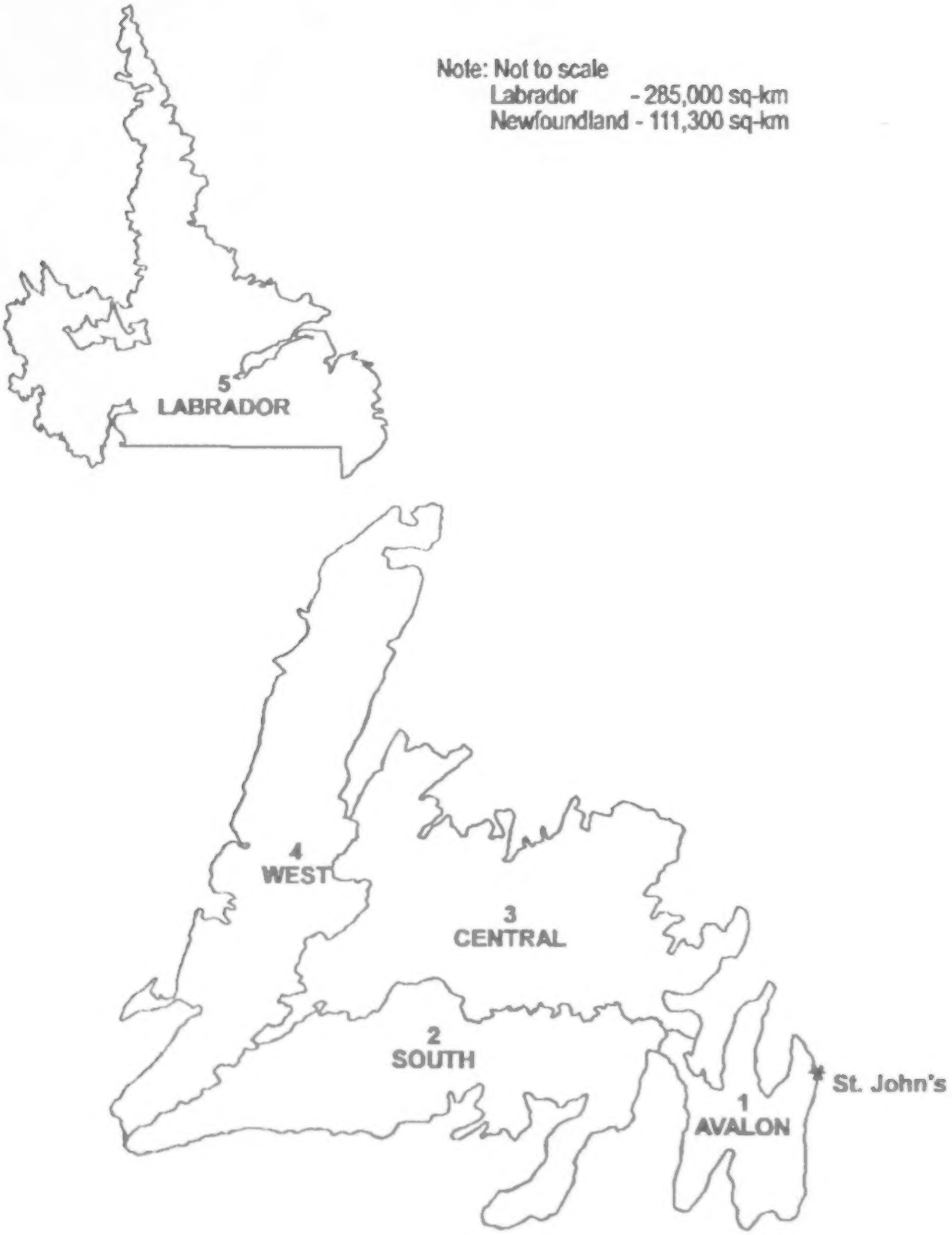
Note: Not to scale
Labrador - 285,000 sq-km
Newfoundland - 111,300 sq-km
5
LABRADOR
4
WEST
3
CENTRAL
2
SOUTH
1
AVALON
St. John's

Figure 2.2 Educational Regions, Province of Newfoundland and Labrador
Source: Newfoundland Statistics Agency

The theoretical perspectives underlying rural/urban differences are generally related to disadvantages of one form or another in rural areas. Brown (1985) referred to the inability of small rural schools to provide an adequate basic education to their students or to prepare them for college. Wilson (1991) indicated that access to advanced mathematics, physics, and chemistry is much reduced for rural students in Newfoundland which in turn lessens the likelihood of their attendance at university and handicaps them in terms of access to professional programs if they do attend because they lack the admission prerequisites. Distance from home community to a postsecondary institution and the costs associated with leaving home and living in an urban centre to attend university or college were cited by principals of both secondary and postsecondary schools in Newfoundland as impediments to young people going on to further education. Rural values and indoctrination of youth into those values were theorized to detract from pursuing postsecondary education (Pike, 1970; O'Neill, 1981). The assumption is that there is a subculture in rural environments which tends to be oriented to the concrete and the practical. Abstract and theoretical frames of reference, attributes considered conducive to involvement in higher education, are minimal or non-existent in rural communities (Pike, 1970, p. 73). Knowledge which parents possess and the range of their influence is often restricted to the local community. Consequently, according to O'Neill (1981, p. 61), many young people from rural areas are dissuaded from continuing on to postsecondary education after high school.

A similar explanation is given for community attachment. O'Neill (1981), in reference to students from small villages who wished to remain there rather than pursue further education, commented that

> Many village residents are direct descendants of older local farm families. As such, they have numerous and close ties with farm friends and relatives. In fact, many village residents are recently retired or semiretired farmers who work in the local community as farm labourers. Subsequently, many young people may willingly accept seasonal employment, in the form of unskilled or semi-skilled work, in order to remain in the vicinity (p. 62).

Looker (1993) shared a similar view in relation to rural youth in Nova Scotia. Her observation was that

> For rural youth, the cost of having to leave to get a secure job becomes evident when one examines their degree of commitment to their home community. The characteristics of rural communities that make them attractive to these youth--the strong family ties, the close knit community, the security of 'everyone knows you', the friendship networks, the family history--make it more difficult for the youth to leave (p. 64).

Both of the above descriptions aptly apply to many small fishing and other rural communities in Newfoundland and may be an appropriate explanation for the reluctance of many young people who live in those outports to continue on to further education once they graduate from high school.

Endogenous Variables

Most of the endogenous variables selected for this study had been examined in varying degrees in previous studies. The variable, Barriers, is an exception, possibly due to the emphasis given to ascription and meritocratic factors in status attainment models (Kerckhoff, 1976). Academic Achievement, usually measured as the average mark obtained in grade 12 subjects (Carpenter

& Western, 1984; Elsworth & Day, 1983), and educational attainment, measured as high school graduation (Williams, 1987; Clifton et al., 1991) were found to have substantial effects on postsecondary participation, independent of all other variables.

The influence of significant others on educational attainment or aspirations has been widely studied (Conklin & Dailey, 1981; Williams, 1972; Reitzes & Mutran, 1980) with a high degree of consistency apparent in the results. Parents were invariably found to exert the greatest influence on their children's decision to enter postsecondary education (Williams, 1972; Carpenter & Western, 1984; Hayden & Carpenter, 1990; Kandel & Lesser, 1969; LeClair, 1988) with teacher encouragement and peer influence second and third respectively in their effects (Hayden & Carpenter, 1990; Carpenter & Fleishman, 1987). The only study found to have contrary results was Picou and Carter (1976, p. 18). While they found that the effects of parental influences on educational aspiration were statistically significant, peer modelling effects were strongest in all but two residential categories, namely, small city and large city youth.

Vocational Self-concept was not distinguished separately from self-concept as a psychological variable in the educational attainment models that were reviewed. Marsh (1984) made the distinction among general self-concept, concept of ability, mathematics self-concept, and non-academic self-concepts in suggesting that useful research has been hampered by "the inherent subjectivity of the [self-concept] construct" (p. 165). He indicated that findings from his own study of 305 grade six students provided support for the notion that academic and non-academic self-concepts needed to be separated for research purposes (p. 172). In speaking directly of occupational self-concept, Erikson (1968) suggested that the choice of an occupation meant more than remuneration and status to a young person. Settling on a definite occupation served a function of helping young people sort out and define who they were and how they fitted into the general social order (pp. 129-132). Research on Australian grade 7-12 students (LeClair, 1988; Elsworth & Day, 1983) confirmed the importance that choice of a vocation had on the courses of study which students selected in high school. Students with higher education in mind more commonly enrolled in science courses in grade 12 while those without postsecondary ambitions generally enrolled in non-science programs.

The Barriers variable in the study pertained primarily to financial constraints or to the academic prerequisites necessary to meet the entrance requirements of postsecondary institutions. The issue of income foregone, i.e., potential income foregone by not being available to work full-time was included as a question in the student interview protocol and was also included indirectly in the survey data through items pertaining to employment or to support of the family. (See AEC, 1991.) The underlying assumption was that having a job, or wanting to get a job, could be a barrier for young people who otherwise would enroll in postsecondary education. Either the need to work existed in order to help support the family or to pay one's way into eventual postsecondary schooling or the feeling was present of not wanting to give up a job one already had in order to go to university or a technical college. In either case, the barrier was in the form of wanting or having employment.

The real financial constraints were assumed to be in the form of a perceived inability to meet the costs associated with attending postsecondary education. Costs related to fees, books, food, transportation, housing (for students living away from home) and other incidental living costs. While student loans would be available under the Canada Student Loan Program, additional financial support was expected to be required which would be provided either through the family or through income earned from part-time work or a full-time summer job.

Academic constraints were assumed to act as a barrier to some students in terms of gaining entry to a postsecondary institution or to specific programs if general admission requirements were met. Wilson (1991) was cited earlier with reference to the dilemma posed for some students from rural areas who were not able to acquire advanced mathematics, chemistry, or physics in grade 12 and who were delayed entry into professional schools at university until the necessary prerequisites were obtained. Students are generally aware of the courses they need to pass in high school in order to be admitted to university or to the various technical schools. They also know they need a certain overall average in the required courses. A common practice for increasing numbers of grade 12 graduates in Newfoundland is to return to high school in the September following graduation to upgrade their scores in certain strategic courses before they apply to a postsecondary institution.

Theoretical support for the hypothesis that a number of structural barriers (finances, costs, admission standards) exist to impede participation in postsecondary education was provided by Kerckhoff (1976). As an alternative to the socialization perspective (ascriptive and meritocratic) generally adopted in status attainment models, he proposed an allocation model which focuses on criteria in the attainment process that are externally imposed. He compared the two models (p. 68):

> A socialization model tends to view the individual as relatively free to move within the social system, his attainments being determined by what he chooses to do and how well he does it. In contrast, an allocation model views the individual as relatively constrained by the social structure, his attainment being determined by what he is permitted to do.

He referred to constraints as being in the form of structural limitations and selection criteria. While he did not define structural limitations specifically, he said they "are imposed by functionaries in various institutional settings, and that they consist largely in providing or withholding opportunities" (p. 373). Examples of structural limitations which he inferred were (a) ability groupings in the early grades, (b) placement of adolescents in high school programs, (c) quality of college attended, (d) teacher expectations of students' performance and how those expectations subsequently influenced how teachers treated students, (e) parental influence on school personnel that was directed towards gaining favour for their children, (f) the nature of advice given to students by school counsellors on course choices, admission to college preparatory curriculum, and taking placement tests, and (g) teacher ratings of students (pp. 373-375). Structural limitations in the current study have been identified as relating to costs and obtaining adequate financing, access to postsecondary programs, or relinquishing a job to attend. Selection criteria referred to academic prerequisites for postsecondary admission.

The causal ordering of the endogenous variables is partly based on convention, partly by hypothesis, and partly by the notion that social psychological variables have reciprocal influences. Turrittin et al. (1983) considered academic performance as causally prior to all other endogenous variables in their model as did MacKinnon and Anisef (1979). Williams (1987) and Clifton et al. (1990) placed educational achievement and educational attainment in successive order. Hayden and Carpenter (1990) placed influence of significant others before academic achievement. Carpenter and Western (1982) ordered their endogenous variables by placing school performance first, significant others second, and self-concept last.

In the conceptual model used in this study (see Figure 2.1), Academic Achievement was considered to result from the interplay of the exogenous variables, and that Academic Attainment, i.e., grade 12 graduation, causally resulted from having achieved sufficient marks in grade 12 subjects to meet the graduation requirements. The influence of Significant Others on Participation is considered to be a function both of the educational status of the respondents and of the psychological support they get in terms of confirmation from others of their occupational self-perception and their occupational preference.

The variable, Barriers, is not causally ordered in the model but is placed at the end of the list of variables on the assumption that given the previous statuses of achievement and attainment, positive encouragement by significant others and a favourable vocational self-concept, structural impediments could still exist which prevent respondents from continuing with their education. For example, no matter how much psychological support a young person received at home or elsewhere, if a student loan were insufficient and the family could not afford to assist financially and a summer job were not available, the student was unlikely to continue with further education after high school unless something else "magically" intervened to overcome the financial barriers that stood in the way. For some students, such barriers could impede but not actually prevent participation because other influences could mediate their inhibiting effects.

The simplistic assumptions about the causal ordering of the endogenous variables are not being tested in the model. Causal relationships among the variables are considered to be superfluous because the main interest in the study is on the relative effects of all the independent variables, both exogenous and endogenous, on postsecondary participation. The concern with the endogenous variables is on the extent to which they mediate the effects of the exogenous variables on participation. Thus, while a causal direction of the intervening variables in the model is hypothesized, causal relationships are left unanalyzed.

Summary

The foregoing discussion showed that educational attainment research followed a tradition established in status attainment research. The Blau and Duncan (1967) and the Wisconsin (1967) models of attainment are generally identified as the genesis of this tradition. Research in North America, Australia, and Europe was patterned on these early models but it built on and expanded them to varying degrees of complexity. The basic pattern was that a selection of family background variables directly influenced the educational attainment of the subjects under study. A number of social psychological variables intervened to mediate the effects of the exogenous variables on the criterion variable(s) so that background variables were shown to have both direct and indirect effects on educational attainment. Typical sources of data in educational attainment research were longitudinal in nature and were usually obtained by national, regional, or local surveys. Educational attainment research in Canada was shown to be less extensive than that conducted elsewhere but nevertheless was similar in nature and scope. The theoretical model developed for this study was described and analyzed. Both theoretical and empirical support was provided for the selection of the exogenous variables and for the causal ordering of the endogenous variables. The model provided the basis for the development of the study and the framework for the subsequent statistical analyses.

Chapter 3

Method

Introduction

The main purpose of this study was to identify variables which were associated with a young person in Newfoundland undertaking further education beyond high school. Undertaking further education was defined as participating in a postsecondary education program that extended for six months or longer. This chapter describes the research methods used to conduct the study: research design, sources of data, population and sample, data collection procedures, data preparation, and statistical analysis.

Research Design

One criterion variable and 17 independent variables were used in the study. The criterion variable was a dichotomous variable--Participation or not in Postsecondary Education. In nature, it was an ordinal variable in that participation referred to involvement in a program of study that had a duration of six months or longer. Survey respondents could either have taken a program of six months to one year, one to two years, two to three years, four years, or more than four years. However, the categories of the criterion variable were not included in the analysis; instead, it was treated as dichotomous. The independent variables were primarily respondents' demographic background and student environmental variables which could influence the participation of the respondents in postsecondary education.

All variables, criterion and independent, were ultimately selected following a consultation process with various stakeholders in Newfoundland education. Crocker and Riggs (1980) first articulated the serious need to raise postsecondary participation levels among 18-24 year old Newfoundlanders to at least the Canadian average of 19.2% in 1978-1979. At that time, Newfoundland's postsecondary participation rate was 10.4%, a difference of approximately 9%. Published postsecondary participation rates by Statistics Canada (see Table 1.1, Chapter 1) for 18-24 year olds in 1990-1991 indicated Newfoundland's rate was 21.9% compared to a national average of 30.9%. While this was a considerable increase for Newfoundland during the 12-year period, the 9% differential with the rest of Canada had not altered from 1978-1979. In follow-up discussions with administrators of public postsecondary institutions in Newfoundland and with senior officials at the provincial Department of Education who were responsible for postsecondary education policy, confirmation was given that our low participation rates were a problem that needed to be studied, with a focus on the reasons behind the low rates. Consequently, postsecondary participation was selected as the criterion variable.

In anticipation of conducting such research, a pilot study was conducted at the University of Alberta during the winter, 1991. The purpose of this pilot was to help identify a list of possible predictor variables on participation. (Details of the pilot are given in a further section of this chapter.) When the preliminary list was combined with another list that was prepared following an overview of the educational attainment literature and the survey data from the YTLM study (see Chapter 1 and a later section of Chapter 3), a smaller list was developed that resulted finally in 17 of the most frequently mentioned variables being selected as independent variables. They were classified as source and intervening variables.

Categories of source variables included (a) personal variables, (b) family variables, (c) school variables, and (d) community variables. The groupings were sub-divided as follows:

Personal Variables
- . Gender
- . Career Plans
- . Well-being
- . Learning Style

Family Variables
- . Value of Education in the Family.
- . Family Size (number of siblings)

School Variables
- . Guidance
- . Career Information
- . Mathematics Program

Community Variables
- . Geographical Region
- . Rurality (Rural/Urban)
- . Attachment

The five other independent variables were considered to be intervening variables in that they mediated between the source or background variables and the dependent variable of Participation. These variables included (a) Academic Achievement, which was defined as the average marks attained on grade 12 provincial public examinations, (b) Academic Attainment, defined as grade 12 graduation, (c) two subsets of psychological support, namely, Significant Others and Vocational Self-concept, and (d) Barriers, defined as structural obstacles to participation which could have been in the form either of lack of finances, inaccessibility to postsecondary programs, costs, distance, a lack of academic prerequisites, or employment (having or not having a job). A description of how each variable was measured is provided in Table 3.3. The theoretical model described in Figure 2.1, Chapter 2, depicted the conceptual relationships of the independent variables and the direction of their effects on the criterion variable.

The study was guided by one main research question and five subsidiary questions. The main research question provided a specific focus to the study while the subsidiary questions provided a basis for the statistical and qualitative analyses which were carried out. The information obtained relevant to the subsidiary questions collectively addressed the main research question.

Population and Sample

The study sample consisted of one of two cohorts of Newfoundland youth who are being tracked in a longitudinal study that began in April, 1988. The provincial Department of Education, with financial support from the Canada/Newfoundland Youth Strategy Agreement, is funding an anticipated 7-year study on the transition of youth from high school into ultimately the labour market. Researchers from Memorial University of Newfoundland are conducting the study which is known as the Youth Transition into the Labour Market (YTLM) study. It focuses on two samples of young people: one cohort consists of all known secondary school dropouts, approximately 1,750, who left school during the 1987-1988 school year. The second cohort consists of all those students in the province who were in grade 12 (Level III in the Newfoundland system) during the 1988-89 school year, approximately 10,300 students.

The grade 12 group or population was of interest in this study. Data from the first survey of the Level III cohort, conducted during April and May, 1989, and the third survey, conducted in January, 1991, were used as the main sources of information for the study. The size of the sample was 5,420 which was the total number of respondents to the third survey in January, 1991. These 5,420 youth were part of the 7,390 students who responded to the first survey in 1989.

Table 3.1 compares four features of the provincial population of Level III or grade 12 students with the study samples. It shows that females were slightly over-represented in the two survey samples. There was proportionately 1.7% more females in the survey 1 sample and 2.5% more females in the survey 2 sample than were in the general population of females in the province. There was also a distinct rural bias in the survey samples where 7% to 9% more rural respondentsappeared over the proportions shown in the population. This discrepancy was largely due to the non-participation of three large urban high schools in the YTLM study that were located in Region 1 in the province. The non-participation of these schools was also undoubtedly the cause for a drop in the proportion of respondents from Region 1 in the survey samples. There were 4% to 6% fewer respondents from Region 1 in the two samples than were in the population of Level III students who were living in Region 1 during the 1988-1989 school year.

Table 3.1

Comparisons of Provincial Level III (Grade 12) Population With Study Samples

	Level III Population (N = 10,323)		Survey 1 (N = 7,390)		Survey 3 (N = 5,429)	
Gender	Freq.	%	Freq.	%	Freq.	%
Male	5,094	49.3	3,519	47.6	2,540	46.8
Female	5,229	50.7	3,871	52.4	2,889	53.2
Rurality						
Rural	4,994	48.4	4,093	55.4	3,102	57.1
Urban	5,329	51.6	3,297	44.6	2,327	42.9
Region						
1	4,427	42.9	2,826	38.2	2,016	37.1
2	999	9.7	872	11.8	676	12.5
3	2,519	24.4	1,999	27.1	1,560	28.7
4	1,754	7.0	1,342	18.2	920	16.9
5	624	6.0	351	4.7	257	4.7
Mathematics Program (N = 9,173)						
Academic	5,512	60.1	4,573	61.9	3,338	61.5
Advanced*	1,495	16.3	1,236	16.7	973	17.9
Business	2,166	23.6	1,551	21.0	1,110	20.4

*Used as a school variable in the study, mnemonic = Advmath.

Sources of Data

The study was both quantitative and qualitative in nature. The quantitative character is reflected in the primary sources of data used to conduct the research, namely, the questionnaires used in survey 1 and survey 3 of a longitudinal study of high school seniors that has been underway in Newfoundland since April, 1988. Additionally, data were selected from the provincial public examinations file at the Department of Education for two of the study variables. The secondary sources of data consisted of a series of telephone and personal interviews conducted with principals and other senior administrators of postsecondary education in the province, principals and guidance counsellors of the K-12 education system, and survey respondents who were part of the grade 12 sample of the YTLM longitudinal study. Information from the interviews provided a qualitative dimension to the results of the quantitative analysis on many of the study variables.

Quantitative Data

Data of the type suitable for quantitative analysis were provided by two survey instruments used in the YTLM study. Appendix B shows the instrument which was administered to the Level III students in survey 1, and Appendix C the instrument administered to the same sample in survey 3. The first questionnaire was developed from a consideration of the general research questions which were posed in the initial terms of reference of the YTLM study. (See Spain et al., 1987, p.133.) At that time, the anticipated general informational areas were as follows: (a) participation in education, (b) experience in the labour market, (c) job search experience of youth, (d) success in the labour market, (e) job and educational search skills possessed by youth, (f) job-holding skills possessed by youth, and (g) characteristics, aspirations, and goals of youth. The instrument was subsequently designed to gather data on these areas of informational need. The final result was a 22-page questionnaire containing 76 questions organized under three sections:

Section A	Background Information
Section B	Career Plans
Section C	Work Attitudes And Knowledge

The instrument used in survey 3 was a 14-page questionnaire containing 35 questions, many with sub-parts, and organized under the following six sections:

Section A	What Have You Been Doing Over The Past Year (1990)?
Section B	What Are Your Plans For This Year (1991)?
Section C	Where Do You Expect To Be In Five Years?
Section D	What Progress Did You Make On Your Career In 1990?
Section E	What Was Your Experience As A Worker During 1990?
Section F	What Was Your Formal Education And Training As A Student During 1990?

Both survey instruments yielded various kinds of data. Many questionnaire items were categorical in nature whereby two or more choices were provided for a response. Other items provided interval data, or nominal data, and still others pertained to ordinal data where respondents were asked to rank order their choices. Some questions were included which had an open-ended component where respondents were asked to elaborate on the question or to provide an answer for which a choice of response was not given. While many of the questions in both instruments were designed to elicit a response on the perceptions of the respondents to a great number of things, some items on both questionnaires elicited factual information about the respondents or their parents. These questions were either in a design that required a numerical response such as a birthdate (e.g., Q. 3, survey 1), or a single check mark to a column of choices (e.g., Q. 11, survey 3).

These two questionnaires were designed specifically to gather information on the transition of youth from school into the labour market. Variables selected by the researchers of the YTLM study focused on general areas of information that were considered relevant to the longitudinal nature of the study, and also focussed on those questions specified in the terms of reference of the study. It was not the intent to solicit in-depth information solely on participation in postsecondary education, although some items pertained to post-high school educational experiences. In this sense, the current study on participation utilized the two questionnaires for a purpose separate from the primary intent of the YTLM researchers.

Items for the current study were selected systematically from the two questionnaires. Ultimately, the selection flowed from the general and specific research questions which guided the study. These questions were first developed following an initial review of the literature related to participation. Secondly, they were based on the results of two preliminary studies: (1) a pilot study conducted with university students and some of their non-university friends at the University of Alberta, and (2) a series of interviews with postsecondary administrators in Newfoundland. Table 3.2 shows the eventual matching between the items on the two YTLM questionnaires and the research questions to which they apply in the study . At this stage, the linkages between the instrument items and the research questions are general in nature and some questionnaire items appear to be used more than once and for different research questions.

Table 3.3 provides a fuller description of each independent variable. It gives the mnemonic which was used to identify each variable in the subsequent statistical analyses, the survey in which the item appeared, the type of data from which the variable was drawn, and the item in the respective questionnaire where the variable was located, as well as the scoring method used to measure the variable.

Some items from the instruments were used as discrete variables in the study analysis; for example Gender, Rural/Urban, and Family Size. Most, however, were used to develop linear composites or hypothesized variables. and the items used for this purpose consequently contributed in an indirect way to the statistical analyses. The composites--Career Plans, Attachment, Value of Education, Guidance, Career Information, Well-being, Vocational Self-concept, Significant Others, and Barriers--were developed by pooling separate questions or sub-parts of questions from the two instruments which were considered

Table 3.2

Matching of the Study Research Questions With the Questionnaires from Survey 1 (S1) and Survey 3 (S3)

Research Questions		S1 and S3 Questions
1.	Gender	S1 - Q.2
	Rural/Urban	S1 - Q.6
	Region	S1 - Q.5,6
2.	Well-being	S3 - Q.5,6,19
	Career Plans	S1 - Q.29b,31,35,41,43,53 S3 - Q.1,9,14,15,33b,c
	Attachment	S1 - Q.7,37,54,60 S3 - Q.13,17,21,32e,0,33c
	Learning Style	S1 - Q.15,64a,b
3.	Family Size	S1 - Q.12
	Value of Education	S1 - Q.21,36a,40,42,45,47 S3 - Q.15,18,23,33d,35
4.	Guidance	S1 - Q.21c,36a,64a,c S3 - Q.22,23,33d,h
	Career Information	S1 - Q.26,49a,b,52a,b,c,59 S3 - Q.21,22,23
	Advanced Mathematics	S1 - Q.25
5.	Academic Achievement	(Dept. of Education data)
	Academic Attainment	(Dept. of Education data)
	Vocational Self-concept	S1 - Q.30,31,33,37,62a,b,e, h, 65
	Significant Others	S1 - Q.36a; S3 - Q.33d
6.	Barriers	S1 - Q.24,49a,54a,b,60 S3 - Q.7,8,17,21,31,33g

Table 3.3

Description and Measurement of the Study Variables

Mnemonic	Survey	Description	Type *	Item/measurement **
Gender	1	Sex	Raw	Q.2. 1=male; 2=female
R_U	1	Rural or Urban community where respondent lives	Coded (Dept. of Education data file)	Q.5,6. 1=rural; 2=urban
Reg 2 Reg 3 Reg 4 Reg 5	1	Geographical region where respondent lives. 2=south coast; 3=central; 4=west coast; 5=Labrador	Coded (Dept.of Education data-school/community codes)	Q.5,6. 0=not in region 1=in region

Plans	1	Respondents' career plans regarding education and likely occupation	PC	Q. 41, 43, 53. Recoded so higher value indicates a plan; e.g., Q.41, descriptor s2029
				If (s2029 eq 5) Cp1=1
				If (s2029 ne 5) Cp1=2

Famsize	1	Size of respondents' family (number of brothers and sisters)	Raw	Q.12. Actual numbers

Attach	1, 3	Respondents' attachment to family and community	PC	S1: Q.37, 60; S3: Q.13,17 Recoded so higher values mean greater attachment; e.g., Q. 37, descriptor s2022, (1=4)(2=3)(3=2)(4=1)
Valued	1	Value of education in respondent's home	PC	Q.40, 42. Recoded so higher values mean education was more highly valued; e.g., Q.40, descriptor s2028 (1,2,5,6,7=1)(3,4=2)
Guidance	1, 3	Use and helpfulness of guidance services in high school	PC	S1: Q.36a; S3: Q.22, 23, 33d. Recoded so higher values mean greater use and helpfulness; e.g., Q.36a, descriptor s2017, "a lot"=3, "not at all"=1
Careinfo	1	Availability of information on careers and occupations	PC	Q.59. Recoded as dummy variables; e.g., 1=yes, 0=no; and summed to get a combined score of o to 3. Higher values mean greater availability of information.
Advmath	1	Advanced grade 12 mathematics program	Raw	Q.25

Wellbe	3	Well-being: Respondents' general satisfaction with life and relative absence of problems or anxiety	PC	Q.5, 6, 19. Recoded so higher values mean greater satisfaction and less problems; e.g., Q.5, descriptor L335001; very satisfied=4, very dissatisfied=1
Lstyle	1	Learning style: Respondents' preferred method of learning	Raw	Q.63a, b. Q.63a recoded so higher values mean more independent learning (1=4)(2=3)(3=2)(4=1)(5,6=0)
Avg.	n/a	Academic Achievement: Average marks in grade 12 public examinations	Raw (Dept. of Education data)	Average marks in 8 of 27 possible courses. (See Appendix G.)
Hsgrd	3	Academic Attainment: High school graduation	Raw	Q.2. Recoded data (78, 86-90=2, i.e., graduated)(11=1, i.e., not graduated)
Vocself	1	Vocational Self-Concept: Respondents' view of their ability to perform certain kinds of work	PC	Q.65. Recoded so higher values mean high vocational self-concept; e.g., descriptor s3006; "very easy"=4, "very difficult"=1
Sigoths	1	Perceived influence of parents compared to influence of friends and others on respondents' choices	PC	Q.36a. Recoded so higher values mean more perceived influence, e.g., descriptor s2012, (1=3)(3=1)

Barriers	1, 3	Perceived barriers to participation in postsecondary education	PC	S1: Q.54a, b; S3: Q.21. Recoded so higher values mean more perceived barriers; e.g., Q.21, descriptor L3321004, "not a problem"=1, "a serious problem"=4

Participation	3	Participation in postsecondary education	Raw	Q.33, 33b. Recoded as dummy variables; e.g., Q.33b:
				If (L3333008 eq 1 or L3333001 eq 0) Part = 1; Q.33:
				If (L3333001 eq 1) Part = 2.

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* PC refers to variables that were constructed by principal components analysis.

** PC variables are those that were included in the final version of the composite.

relevant to the composite. Appendix I gives a summary of the item matching for each composite. It shows the preliminary match between items and the final match of those items eventually retained in the final version of each composite.

In addition to data from the YTLM surveys, data from the provincial public examination file were extracted to provide information on two of the intervening variables; Academic Achievement and Academic Attainment. Data pertaining to the respondents' average marks in a selection of grade 12 (Level III) courses were picked for the variable, Academic Achievement, and data on grade 12 graduation status were picked for the variable, Academic Attainment.

Validity and Reliability

The initial Level III questionnaire was validated by a field test in two large high schools in two widespread geographical regions of the province. Spain et al., (1987) briefly described the intent: " The purpose of the tryout was to test the response of the students to the questionnaire format, readability, and clarity. An estimate of the time required for completion was also obtained" (p. 135). Some modifications were made following the test (Sharpe and Spain, 1991, p. 25).

The questionnaire used in survey 3 was not field-tested to validate the items. The style and format of the questions were similar to the first survey instrument or were similar to questions commonly asked in other sociological studies for which a general level of agreement and acceptance existed.

Instrument reliability is contingent to a large degree on the nature of the questions asked. Questions seeking a response of a factual nature, e.g., age, gender, birthdate, home community, and number of siblings, generally can be regarded as reliable with the caveat that there could be exceptions depending on the characteristics of the survey respondents. Questions which call for a subjective response, however, such as asking for an opinion or a perception of some phenomenon, do not carry the same assumption of reliability. The normal practice is to test the reliability of those kinds of questions through use of a commonly recognized and widely accepted formula such as Cronbach's Alpha. Statements from the two survey data sets relevant to this study which were subjective in nature were tested for reliability by using the general form of the Spearman-Brown Prophesy Formula (which can be thought of as a special case of Cronbach's Alpha) which estimates test reliability from a single test administration rather than a test/re-test procedure. The formula as described by Nunnally (1978, p. 211) is as follows:

$$R = \frac{K\bar{r}}{1 + (k - 1)\bar{r}}$$

R = the estimate of reliability
K = the number of instrument items
$\bar{r}$ = the average correlation between the items

The composite variables which were constructed through selection of items from the YTLM survey instruments thought to pertain to them were subjected to reliability tests using the above formula. Reliability coefficients ranged from a low of .570 to a high of .809. Generally, composites with a coefficient of reliability of less than .60 were dropped from further analysis in this study. There was one exception (the reason for which is explained in Chapter 4); the variable, Attachment, which had an alpha reliability of .570. Respective tables in Chapter 4 give the alpha reliability coefficient for each linear composite used in the study.

Qualitative Data

Qualitative data for the study were provided through five sources: (a) a pilot study at the University of Alberta; (b) interviews with administrators of postsecondary education in Newfoundland; (c) interviews with provincial high school principals; (d) interviews with guidance counsellors in the province; and (e) interviews with a sample of the YTLM Level III cohort.

Pilot Study

The pilot study at the University of Alberta was done as part of the preliminary preparations for establishing the parameters of the study and for identifying the nature of the research problem. Its purpose was to gather opinions about factors that might influence young people to attend or not attend a postsecondary institution after high school. A simple questionnaire was used which contained five single response items that pertained to the demographic status of the respondents, and five categorical items with an open-ended component that asked for their views on problems associated with undertaking higher education. Such views were expected to suggest possible independent variables for examination in the main study. The questionnaires were distributed in late January, 1991, to students in the undergraduate course, Ed Adm 401, who agreed to participate in the pilot. Instructors at the University of Alberta who were teaching the 401 course both distributed and later collected the completed questionnaires. Some of the undergraduate students distributed questionnaires to their non-university friends and acquaintances who agreed to participate. Also, a number of graduate students in the Department of Educational Administration at the university who agreed to participate in the survey were given questionnaires. Questionnaires were distributed to 95 people and were individually completed by them on their own time.

The results of the pilot study were briefly reported in Chapter 1. Responses to the questionnaire items were helpful in identifying some of the independent variables for the main study and in framing the general and subsidiary questions. The survey instrument used in the pilot study is shown in Appendix A.

Interviews With Postsecondary Administrators

The interview schedule undertaken with administrators of public postsecondary institutions in Newfoundland was the first of the interview series to be conducted. It had two purposes: (a) to solicit the views of the administrators on whether the province's low rate of participation in postsecondary education compared with other provinces in Canada (see Table 1. 1) was a problem that needed to be studied, and (b) to identify, from their perspective, the nature of the problem and the perceived solutions. Six open-ended questions, each with one or more sub-parts, comprised the interview protocol. (See Appendix D.) The questions focused on areas pertaining to the level of postsecondary participation in the various types of public postsecondary institutions in Newfoundland, the implications of Newfoundland's low postsecondary participation rates, the increasing demand for higher education by young people generally, the perceived impediments to their participation, the perceived need to provide encouragement and tangible support to youth if they were to engage in higher education and training, and the locus of control in the province regarding responsibility for postsecondary participation initiatives. The interviews were conducted individually with 13 senior administrators in various institutions consisting of the one university in the province, three technical schools, five community colleges and one or two outlying campuses, and the Department of Education. Responses from these officials indicated problem areas that required examination which in turn contributed directly to their inclusion as independent variables in the main study design.

Interviews With High School Principals

Interviews were carried out with 20 high school principals throughout the province. (The selection process is described in a subsequent section of this chapter.) The primary purpose was to obtain the views of these front-line administrators on specific problems in their region associated with postsecondary participation. Appendix E shows the actual questions which were asked. The protocol consisted of 10 open-ended questions with each one containing one or more sub-parts. Areas of interest included the need to increase participation in higher education in the province, the level of postsecondary participation from their own schools, impediments to young people going on to further education, school promotion of postsecondary participation, availability of higher-level mathematics and science courses, student satisfaction with their high school experiences, student motivation, family and community influences, and responsibility for resolution of the problem of low participation. Two questions asked of high school principals were identical to two questions in the interview protocol used with postsecondary administrators. They related to the perceived need to increase Newfoundland's participation in postsecondary education and to whether more young people wanted to take further education than were currently enrolling. (See questions 1b and 5 in Appendix D and questions 1 and 3 in Appendix E.)

Interviews With Guidance Counsellors

Guidance counsellors were interviewed for much the same reason as high school principals, namely, to solicit their views on local problems which they believed affected the participation of young people in postsecondary education. In many schools in Newfoundland where a guidance counsellor is on staff, the counsellor is responsible for directing the school's career education program, and generally counsellors have more direct contact with students than do other school officials with respect to career and personal counselling. The expectation was that the views of counsellors would contribute significantly to an understanding of the problems being encountered by young people regarding participation in further education as well as help to interpret, post-hoc, the results of some of the statistical analyses of the study. The process used for selecting counsellors is described in a subsequent section.

The interview protocol that was used with the high school principals was also used with guidance counsellors. None of the questions or their sub-parts was changed. (See Appendix E.) An indirect benefit of this approach was that comparisons could be made between the views of principals regarding participation factors and those of counsellors who deal on a daily basis with the personal obstacles and problems that students say affect their school performance and future career choices. The comparisons would in effect be limited because the counsellors and principals were generally not from the same schools. Nevertheless, some comparisons were anticipated to be of interest.

Student Interviews

The "student" interviews were conducted among 20 non-participants in postsecondary education. Interviewees were all subjects of the YTLM Level III sample and were randomly selected. (See subsequent section in this chapter.) The protocol was developed solely to get the views of those young people who had elected not to attend any postsecondary institution since they had left high school. Nine questions on postsecondary participation, all of them containing sub-parts, made up the interview schedule. (See Appendix F.) The questions focused on factors which influenced their decision not to continue their education following high school graduation, career plans while in high school, availability of information on careers and occupations, future outlook, satisfaction with high school, their perceptions of postsecondary education, the influence of family and peers on their career decisions, the influence of school on their preparation for higher education and employment, and current barriers to their participation in postsecondary education if they chose to attend. These questions were developed following the preliminary review of the youth transition literature, the results of the pilot study at the University of Alberta, interviews with administrators of public postsecondary institutions, development of the interview protocols for school principals and guidance counsellors, and viewing of the preliminary results of the analyses carried out on the data from survey 1 and survey 3 of the YTLM study.

Data Collection Procedure

This section describes the process which was followed to collect both the quantitative and qualitative data for the study. The researcher participated indirectly in the YTLM data collection procedures; indirectly in the sense of being a member of the advisory committee at the Newfoundland Department of Education which was assisting the principal researchers at Memorial University with the study. All data for the YTLM surveys were collected directly by the university researchers. Data from the interviews and from the provincial public examinations file were collected separately by the researcher for the participation study.

Survey Data

The first survey of the Level III sample was conducted in the spring of 1989 while the subjects were students in their last year of high school. The following excerpt from the report of that particular survey (Sharpe and Spain, 1991) describes the data collection procedure:

> Based in part on the field testing, it was estimated that 45 minutes to one hour would be required for students to complete the questionnaire. Principals and home room teachers were therefore advised that students would typically need two 40 minute blocks of school time in order to have sufficient time to fill it out. It was suggested that this could be facilitated by having students complete sections A and B in one sitting, and section C of the questionnaire in a second sitting.
>
> The packages of questionnaires were delivered or mailed to schools over the Easter break for administration to Level III homeroom groups during the last two weeks in April of 1989. Most schools were able to administer the questionnaires at that time. However it was the end of May by the time all schools with the exception of two had returned the questionnaires to the research centre. One school neglected to participate, and the returns of another were lost in the mail. Also, in one school, only two of five identified classes of students completed the questionnaires. Each of these schools was a large senior high school and resulted in the loss of about 430 Level III subjects (p. 25).

Questionnaires for the third survey were administered in three different ways: 1. The questionnaire was mailed to home addresses of the Level III sample in St. John's only. Respondents completed the instrument during January/February 1991 and returned it to the university in a pre-paid envelope. 2. The questionnaire was distributed to the homes of the subjects in the Level III sample in all areas outside St. John's by coordinators/interviewers who had previously been selected and trained by the principal researchers to assist with the early school leaver (ESL) sample of the YTLM study. Completed questionnaires were collected a week or so later. 3. In cases where subjects had not returned a questionnaire by the end of February, attempts were made by the coordinators/ interviewers to telephone them. Subjects who could be contacted and who agreed to participate in the survey gave their responses to the questionnaire items over the telephone. Such follow-up telephone efforts resulted in the completion of an additional 1022 questionnaires or approximately 19% of the survey respondents in the third survey.

Data collection from the provincial public examination database was accomplished in five stages. Initially, the public examination file was merged with the YTLM file that had been created from the two Level III surveys and which had been subsequently merged for purposes of this study. Once the merging of the public examination and the YTLM files had been completed, the required information on high school graduation for the relevant subjects in the study was identified and extracted from the merged file. Next, a series of courses on which to compute a grade 12 average was selected. This task was problematic because students have widely differing options available to them on courses required for graduation. The standard on which courses were ultimately selected in order to compute an average was based on those high school courses required for entrance to Memorial University. The reasoning was that university entrance requirements also represented the general admission requirements for most of the 2-year or longer technical programs in the non-university sector of postsecondary education. Memorial University requires a specific group of courses at the 3000 level for admission to its programs. This group consists of one language, one literature, one mathematics, one science, one social studies or one French, and any two other courses at the 3000 level. Some of the courses are required to be 2-credit, namely, mathematics, science, literature, and language. Eleven credits in the prerequisite courses are needed for entrance to first year university. Appendix G shows the 27 high school courses that were eventually chosen for computation of the academic achievement variable. When the courses were selected, the final stage of the process was initiated, namely, programming the computer to calculate individual student averages for the selected courses.

Interview Data

Nearly all data from interviews with the relevant stakeholders were collected by telephone. There were some exceptions for the interviews with postsecondary administrators. In their case, 6 of the 13 were interviewed in-person.

The administrators were purposely selected according to the type of institution they represented and the area of the province where they were located. Most of those interviewed were from regional colleges that had one or more outlying campuses as part of their network. Each of the five regional colleges was represented in the group as well as a selection of outlying campuses. Representatives from the university and the Department of Education were selected based on the positions they held. In the researcher's view, these officials were in key strategic positions that gave them a general perspective on postsecondary participation issues in the province.

A similar interviewing process was followed with all 13 administrators. Subjects were asked questions in the order which the questions appeared on the protocol and responses were recorded by handwritten notes by the researcher who personally conducted the interviews with all the subjects in the four samples. Tape recorders or any other mechanical devices were not used at anytime during or after the interviews. Following each interview, a review was made of the notes taken and minor adjustments to spelling, punctuation, and abbreviations were made accordingly in order to clearly represent what was actually said. This practice helped to avoid guesswork when the notes were later transcribed for incorporation in the reporting process. Interviews with the postsecondary administrators were conducted during the last two weeks in August, 1991, and during January, 1992. Each interview lasted approximately 40 minutes and was held during the workday.

Interviews with the high school principals were conducted during April, 1992, and with the guidance counsellors during June, 1992. In each case, interviews were conducted by telephone, and in each case, sampling was random. For the principals, approximately 258 schools with grade 12 students were listed and entered into the computer and subjected to a random sampling program. The resulting printout showed the schools listed in random order. Principals were then telephoned in the order their names appeared on the list. All principals who were contacted agreed to participate in the study and 20 of those first called were subsequently interviewed over a 3-week period in April. Most of the interviews were held after the school day. Others were held during school hours or during the evening when the principals were at home.

A similar process was followed as for the interviews with the postsecondary administrators. Notes were taken of the responses to the questions, minor grammatical corrections were made following the interviews, and the interviews were later transcribed for inclusion in the study findings.

An identical process of random selection and interviewing was followed with the guidance counsellors. The first 15 counsellors telephoned from a computer-generated randomized list of 230 counsellors eventually translated into a sample of 10 counsellors who were interviewed within a 2-week period in mid-June, 1992. As with the high school principals, all counsellors who were contacted agreed to participate in the study. The interviews were generally held during the school day but a minority of counsellors preferred to be interviewed at home in the evening.

Interviews with former Level III students were conducted following the selection of a computer-generated random sample. The process was somewhat more complex than that used with the principals and guidance counsellors. A number of criteria had to be met in the case of subjects from the student cohort. The sample was to be representative of the male/female and rural/urban profile of the full YTLM sample. In addition, young people were included who had indicated in the first survey that they had a physical handicap. Finally, all subjects in the student interview sample had to have been non-participants in any form of postsecondary education since they were in their last year of high school in June, 1989.

A computerized random sample of 140 people was eventually drawn and a letter mailed to them by the university researchers to seek their involvement in the participation study. Within a month of the June, 1992, mailing, 22 had responded favourably to the interview request. The interviews were subsequently conducted in July, 1992, by telephoning the participants at their home at varying times of the day or early evening. Two of the 22 young people had actually attended a postsecondary institution since they graduated and were consequently not taken through the full interview protocol.

Data Preparation

Before the data could be analyzed, a series of steps was necessary to transform the data from a raw data state to a point of readiness for computer analysis. Data from the instruments used in survey 1 and survey 3 had previously been transformed by the YTLM researchers. Code books had been prepared for each data file and a computer program written to merge the two data sets. The merged data were compressed onto two diskettes and delivered to the

Department of Education where the analysis was carried out. Measurement codes that were initially assigned to each variable were recoded where necessary before the statistical analyses could be done. Table 3.3 provides a description of the variables used in the study. It lists the variables by their mnemonic descripter, identifies the data file which provided the information on them, describes the variables, and indicates how each was measured.

Preparation of the interview data was done in the same way for each protocol. The handwritten notes that were taken during each interview were typed in-full and the responses grouped under the questions to which they pertained. Each interview protocol had been designed so that a single question or sub-part appeared on a page with the remaining space used for noting the response. When the process of typing all the responses to each question was completed, they were paraphrased to capture the commonalities and the differences of the separate responses and then summarized under discernible themes. One respondent from the postsecondary administrator series and three respondents from the guidance counsellor series had asked that a copy of their remarks be sent to them before they were reported in the study. The respective summaries were mailed to the people involved with a request to notify the researcher of any change or deletion. None of the respondents requested changes.

Analysis of the Data

The general and subsidiary questions of the study were statistically tested using data from the two separate instruments used in the first and third Level III surveys. Data were analyzed by principal components analysis, multiple regression, and through estimating direct and indirect effects. For this purpose, appropriate programs from the Statistical Package for the Social Sciences (SPSS) were used. (See Norusis, 1988.) Because the composite variables pertained to items from both sets of survey data, analysis of the data on a merged file was required. The code book had been prepared with this requirement in mind. Analyses were done separately for males and females and for an integrated model where regression and path analytical coefficients measured the effects of all the independent variables on the criterion variable.

Descriptive statistics were compiled to show a selection of the sample characteristics from survey 1 and survey 3. (See Appendix H.) The statistics provided a general description of the scores for the independent variables. These descriptions were used as background information for the regression and indirect analyses. Where appropriate, frequency distributions, means, standard deviations, and the number of cases for each variable are reported.

The independent variables are both exogenous and endogenous in nature. Exogenous variables are considered to lack hypothesized causes, e.g., gender, rural/urban, region, family size, grades, and so on. Endogenous variables are those that have at least one hypothesized cause (Borg and Gall, 1989, p. 617).

In this study, the exogenous variables were the source variables (Gender, Rural/Urban, Region, Family Size, Career Plans, Attachment, Value of Education, Guidance, Career Information, Advanced Mathematics, Well-being, and Learning Style). The endogenous variables were the intervening variables of Academic Achievement, Academic Attainment, Vocational Self-concept, Significant Others, and Barriers.

The latter three endogenous variables were constructed using principal components analysis (a form of factor analysis). This is a technique which uses correlations between variables to construct a smaller number of variables. The correlations are regarded as factor loadings for the newly constructed composites. Simply put, the factor loading is the correlation between the observed variable and the unobserved variable (Furneaux, Bynner, and Murphy; 1973, p. 68).

An arbitrary lower limit was selected to indicate whether the factor loading was significant or insignificant. For this study, all factor loadings below .40 were considered insignificant in that they were regarded as not representing the composite under consideration. In other words, the observed variables were considered not to contribute significantly to the variance in the unobserved variable and were dropped from further analysis.

The principal component method was used to construct the composites. It functions by correlating the instrument items selected for the linear composite, and calculates the relative proportion of the variance contributed to the composite by each item. By using the factor score coefficient, the item score, and the mean and standard deviation of each item, a standard score is computed for each indicator in the composite. Scores are added to calculate an overall composite score. An alpha reliability coefficient which indicates the internal consistency of the composite is then estimated. (See Borg and Gall, 1989, pp. 260-261.)

Correlation matrices were computed on all the variables in the study; first for males, then females, and then for a total group model. In each model, the source or exogenous variables (background and environmental) were correlated with the criterion variable, Participation in Postsecondary Education. The r-matrix for the integrated model was a 21 x 21 matrix of correlation coefficients as shown in Table 5.1 in Chapter 5. The .05 level of probability was accepted throughout as evidence of a statistically significant relationship.

Multiple regression was utilized to examine the extent of the relationship between the independent and dependent variables. This procedure is effective in estimating the degree of influence which two or more independent variables have on the variance of a criterion variable. Kerlinger (1986) explained that

> multiple regression analysis can be conceived as a refined and powerful method of "controlling" variance. It accomplishes this . . . by estimating the magnitudes of different sources of influence on Y, different sources of variance of Y, through analysis of the interrelations of all the variables. It tells how much of the Y is presumably due to X_1 , X_2 , . . . X_k . It gives some idea of the relative amounts of influence of the X's. And it furnishes tests of the statistical significance of combined influences of X's on Y and of the separate influence of each X [with all others partialled out]. (p. 549)

Controlling in this context means that residual values are actually being dealt with rather than the predictors $X_1, X_2, \ldots X_k$. The variable, $X_{1.23 \ldots k}$, is a residual variable that is found by predicting the value of the independent variable, X, and calculating the residual as follows:

$\hat{X}_1 = C_2 X_2 + C_3 X_3 + \ldots C_k X_k$
$\hat{X}_1$ = the predicted value of X
C = the constant
The residual variable = $X_1 - \hat{X}_1 = X_{1.23 \ldots k}$

In a regression equation, the raw or unstandardized regression coefficient b_{y1} is a measure of the change in Y for a unit change in $X_{1.23 \ldots k}$. It (b_{y1}) is the same b that would be obtained if Y were regressed on the new variable $X_{1.23 \ldots k}$. In the regression equation, relating Y to the various X's ($X_1, X_2, X_3, \ldots X_k$), the b's are weights for each of the predictors *after* they have been residualized around *all* of the other predictors. This is what is meant by "controlling." They (b's) explain how a change in Y (the dependent variable) is related to a change in X (an independent variable) after the other independent variables (X's) have been partialled out. (See Pedhazur, 1982, pp. 101-110.)

All independent variables were ultimately entered into a multiple regression equation to estimate the magnitude of the model's parameters, i.e., the causal relationships between the independent variables and the criterion variable. The magnitude is the extent of the effect of each separate independent variable on the criterion variable. It was estimated using both metric or unstandardized regression coefficients and standardized beta or path coefficients.

The metric coefficient helps to explain how a change in the dependent variable (Y) is related to changes in the independent variables. In this study, the point of interest is how a subject can change status from a non-participant in postsecondary education to a participant, and the crucial issue pertains to the necessary changes required in the variables that influence Participation. For example, it is important to understand how much of a change in Guidance, Career Information, Learning Style, Value of Education in the family, and so on, is required in order to positively influence Participation in Postsecondary Education. The b's or metric coefficients help to explain the required magnitude of these changes. Standardized coefficients, on the other hand, help to explain how a change of one standard deviation in Y is related to a change of one standard deviation in X. The size of the coefficient (beta) for a specific variable is the estimate in standard score form of the effect of the variable when the effects of all other variables in the equation are held constant or controlled, as explained above. What is considered more important for policy decisions is the influence of the variables in their original metric because original measures indicate the degree of change required in the independent variables to effect a change in the criterion variable.

Both the metric coefficients and the standardized coefficients are reported as recommended by Pedhazur (1982, p. 250). Metric coefficients are reported to show the parameters between males and females. (See Carpenter & Hayden, 1985; Saha, 1982.) Standardized coefficients are reported primarily in the total group model (integrated) and for estimation of the indirect effects which is explained in a subsequent section of this chapter.

As antecedents to the total group equation or model, separate regression analyses were conducted for males and females. Three reasons exist for doing separate analyses. First, it is evident that the traditional role of women in Western society has undergone revolutionary change in the last 40 years. The research literature and popular press abound with statistics showing that upwards of 70% of women combine traditional homemaking with either full or part-time work. Second, the change is being reflected both in greater school achievement by females and in their increasingly higher rates of postsecondary participation since the 1970s. Bulcock, Whitt, and Beebe (1991) claimed that a complete role reversal had occurred in female achievement in some school subjects. They report on several meta-analytic studies in literature and mathematics (Hyde, 1981; Feingold, 1988; Marsh, 1989) which showed that differences in performance on achievement tests between males and females is both small and declining. Earlier studies were reportedly to have found that girls exceeded boys in performance in language studies but boys tended to perform better in mathematics and science (Tyler, 1956, 1969; Anastasi, 1958). With respect to increased postsecondary participation, they cited findings from Statistics Canada and the National Center for Education Statistics in the U.S., that during the 1980s, both countries experienced for the first time a larger number of women enrolling in and graduating from college than the number of young men (p. 213).

The following quotation from the Australian Education Council (1991) indicates a similar pattern has emerged in that country:

> Since the mid-1970s young women have participated in post-compulsory schooling to a greater extent than young men. From the early 1980s enrolments in higher education by young women have been greater than young men, and since the late 1980s there have been more female than male students in higher education overall (p. 137).

Correspondingly, Table 1.1, Chapter 1, of this study showed the postsecondary participation rates for each of the Canadian provinces over a five-year period, 1986-1991. The rates show that a higher percentage of females than males consistently participated in higher education during this period, a finding which supports that of Bulcock, et al., (1991) above. Third, correlation matrices developed for this study showed that differences exist, albeit small, between males and females in many of the independent variables being examined. Consequently, it was decided to perform separate regression analyses for males and females in addition to analysis for a combined or integrated model.

The same process of analysis was followed in each model. All the exogenous variables were entered into an equation to determine their relationships to the first of the intervening variables, then to the second, the third, and so on. Finally, the criterion variable was regressed on all the exogenous variables and all the endogenous variables. The final equation represented the full model where gender was included as a dichotomous variable. The primary interpretative statistics were unstandardized and standardized regression coefficients, as described above by Pedhazur (1982) and also by

Ferguson (1981), in which t-values were computed to identify the significance of the findings. All t-values greater than ± 2.00 were considered statistically significant at the .05 level.

Direct and indirect effects were computed using the results from the multiple regression analysis. Pedhazur (1982) defined a direct effect of an independent variable on a dependent variable as "the part of its effect that is not mediated, or transmitted, by other variables" (p. 181) and an indirect effect as "the part of the effect of the independent variable that is mediated by or transmitted by another variable or other variables" (p. 181). Indirect effects were calculated by multiplying separately the path coefficients (β) between the exogenous and endogenous variables with the path coefficients between the endogenous variables and the dependent variable. For example, the β between Career Plans and Academic Achievement was multiplied by the β between Academic Achievement and Postsecondary Participation to obtain the indirect effect of Career Plans on Participation. Then the β between Career Plans and Academic Attainment was multiplied by the β between Academic Attainment and Participation to obtain the indirect effect of Career Plans on Participation when mediated through Academic Attainment. The process continued until the calculations for Career Plans were completed for all the endogenous variables. The product of the individual multiplications were summed to obtain the total indirect effects of Career Plans on the criterion variable. That is, the indirect effects on Participation of Career Plans when the variable was mediated in turn by each intervening variable. The same process then began for the next exogenous variable, and so on until the indirect effects of all the exogenous variables on participation were estimated. The total effect of each respective exogenous variable on the dependent variable was calculated by simply adding the direct effect and the indirect effects, as proposed by Alwin and Hauser (1975, p. 39).

The use of these statistics, metric and path coefficients, helped to provide information to test the propositions set for the study. In turn, they helped to answer the major research question, namely, the background and environmental variables which were associated with Participation in Postsecondary Education. The b values (metric coefficients) in particular helped to indicate the amount of change required in the independent variables to bring about a desired change in the dependent variable.

Summary

This chapter described the method used to conduct the study. The design of the research flowed from the conceptual framework depicted in Chapter 2 which structured the 17 independent variables as a series of exogenous and endogenous variables that were hypothesized to be related linearly to the dependent variable. The independent and dependent variables were selected following a cursory review of the youth transition literature and from a pilot study and series of interviews undertaken as a preliminary part of the main study on postsecondary participation.

Quantitative data for the study were obtained from the YTLM longitudinal study that began in Newfoundland in the spring, 1989. Qualitative data obtained from interviews with former students and with educators from the secondary and postsecondary education systems in Newfoundland supplemented the survey data. Other information was obtained from federal and provincial public documents and from the public examination database at the Department of Education.

The data were organized and analyzed using factor analysis, multiple regression, and path analysis. Separate analyses were conducted for males, females, and a total group model. The multiple analyses were designed to help answer the research questions posed for the study.

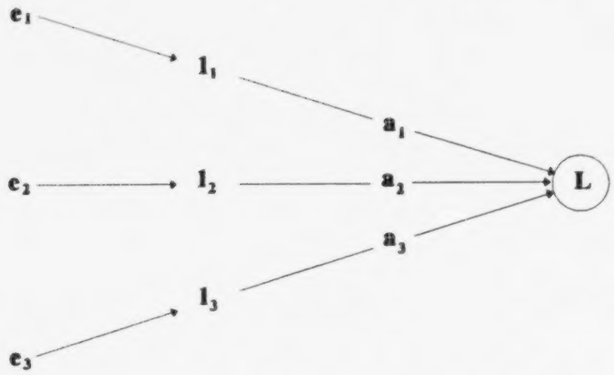
Chapter 4

Analysis of Linear Composites

Introduction

This chapter describes and analyzes the linear composites which made up the majority of the independent variables in the study. The data contained a number of items or observations that appeared to capture the essence of the respective independent variables, These items were "culled" from the YTLM questionnaires and subjected to a principal components analysis (a form of factor analysis). Each set of composite indicators was collapsed and the best linear composite selected, i.e., the composite that maximized the internal consistency of the variable was selected, and a standardized score was estimated for it. Measurement models were developed for each composite and their reliability coefficients were calculated.

Nine of the independent variables in the study were linear composites. That is, each of these variables was a composite of its respective observed indicators, as mentioned above, which were the actual questions or statements pertaining to it from the questionnaires. For example, the variable, Attachment, was a reflection of the scores on the 9 questions or sub-parts that were hypothesized to pertain to the degree of attachment the respondents had for their family and home community. The structural relationship of the individual items to the concept of attachment is the same as is illustrated in Figure 4.1 for a general composite.



L is the linear composite
l_1 - l_3 are the indicators (or the observed questionnaire items) that make up the composite
a_1 - a_3 are the factor loadings
e_1 - e_3 are the residuals or parts of the indicators not related to the composite

Figure 4.1 A sample measurement model

Each item selected for a particular composite variable was subjected to a sequence of principal components analyses. In this procedure, a factor loading was computed for each item to determine how well it correlated with the composite. The first stage of the principal components analysis screened out items that did not seem to relate highly to the common core. A loading of .40 was selected as the lower limit. That is, the indicators or items were considered to accurately represent the composite if their factor loadings were .40 or above. If a factor loading for an item was less than .40, the item was considered to be weakly related to the composite variable and it was dropped from any further analysis. The items retained were those which appeared to be factorially homogeneous with the composite and capable of contributing to its variance.

Following the initial analysis, items that remained in the pool were subjected to a second principal components analysis. A standardized score was computed for each of the nine composite variables in the study. Scores on the individual items retained from the previous analysis were used in the following general equation to compute the standardized score: (See Harman, 1967, p. 15.)

$$L = a_1\left(x_1 - \bar{x}_1\right)/sd_1 + \ldots + a_n\left(x_n - \bar{x}_n\right)/sd_n$$

where L is the linear composite score
$a_1 - a_n$ are factor score coefficients computed by dividing the factor loading by the overall eigenvalue, and
$(x_n - \bar{x}_n)/sd_n$ is a general equation used to standardize the variable by transforming the raw item score into a standard score with mean of zero and standard deviation of one.

Composite Variables

The principal components analysis for each independent composite variable in the study is reported separately. The nine composites were Career Plans, Guidance, Attachment, Career Information, Significant Others, Well-being, Value of Education, Vocational Self-concept, and Barriers. Each linear composite was initially subjected to a principal components analysis using a comprehensive list of items selected from the two YTLM questionnaires. Appendix I lists all the items analyzed for each composite, both those which were eliminated because they were weakly related to it and those which were retained for subsequent analysis.

The questionnaires were of the omnibus variety, and as far as could be ascertained, they were not developed in accordance with a specific theoretical framework. Thus, where the questionnaires were used for secondary data analysis in the present study, the analyst viewed the data carefully in order to align them to the theoretical order established for the study. To ensure that all the evidence supportive of a composite was included, the analysis erred on the side of magnanimity by including in the original set of indicators every item that might possibly be related to the composite in question. This explains to some degree why so many of the indicators were dropped from inclusion in the final version of a particular composite. It also helps to explain why so many of the alpha reliability coefficients of the resulting composites were rather modest.

Career Plans

Table 4.1 displays the final correlation matrix for the Career Plans composite. The variable was defined as the respondents' anticipated plans in life regarding education and likely occupation. Initially, eight items were identified in the two YTLM questionnaires as contributory indicators of the Career Plans composite. Using the initial correlation matrix, the eight items, labelled Cp1 through Cp8, were subjected to a principal components analysis. Items were systematically eliminated until only those with a factor loading of .40 and above remained. Those remaining items were again subjected to a principal components analysis with additional items again being deleted. The process continued until the final items were identified, namely, Cp1, Cp2, and Cp3.

The items contained in the final version of the Career Plans composite are presented below in the way they appeared in the survey instrument. The question number and the coding descriptor, e.g., S2031, identifies each composite indicator. The designation, S1, indicates that the items were from the instrument used in survey 1. The scoring key below each item shows how the variable was scored.

Cp1 = Q. 41, S2029, S1

Does your father/male guardian agree with your plans for next year?

Agrees completely	1
Agrees mostly	2
Disagrees somewhat	3
Disagrees a lot	4
I have no plans	5

Scoring key: Recoded as a dummy variable so higher values = some career planning; i.e.,

If (s2029 eq 5) Cp1 = 1
If (s2029 ne 5) Cp1 = 2

Cp2 = Q. 43, S2031, S1

Does your mother/female guardian agree with your plans for next year?

Agrees completely	1
Agrees mostly	2
Disagrees somewhat	3
Disagrees a lot	4
I have no plans	5

Scoring key: Recoded as a dummy variable; i.e.,

If (s2031 eq 5) Cp2 = 1
If (s2031 ne 5) Cp2 = 2

Cp3 = Q. 53, S2068, S1

What are your thoughts about next year? What do you plan to do? Which of the following plans describe you best? *(Circle one)*

I don't have a plan (answer questions 54 to 61)	1
I plan to take the year off (answer questions 54 to 61)	2
I would like to continue my education/training but I may have to go to work (answer questions 54 to 61)	3
I shall probably continue my education/training but I would rather go to work (answer questions 54 to 61)	4
I definitely plan to go to work (answer questions 54 to 58)	5

I definitely plan to continue my education/training (answer questions 59 to 61) 6

I plan to return to high school in September (Go to Section C, question 62) 7

Scoring key: Recoded as a dummy variable; i.e., If (s2068 eq 1) Cp3 = 1
If (s2068 ne 1) Cp3 = 2

Table 4.1 shows the correlations, means, and standard deviations for the above selected items. Table 4.2 describes a measurement model for the final version of the composite. It shows the mnemonic given to the variable, the number of the questionnaire item, the code developed for the item in order for the computer to generate statistics, the factor loading and the factor score coefficient for each item, and the residuals. Five additional identifiers were included in the computation of the first principal components analysis but were rejected because their factor loadings were less than .40. (See Table 4.2a, Appendix I.) The alpha reliability for the composite was .765.

Table 4.1

Correlation Matrix for the Career Plans Composite

	Cp1	Cp2	Cp3
Cp1			
Cp2	.903		
Cp3	.307	.320	
Mean	1.961	1.966	1.974
Sd	0.188	0.179	0.156

Determinant of correlation matrix = .165
Kaiser-Meyer-Olkin measure of sampling adequacy = .555

Table 4.2

Measurement Model for the Career Plans Composite

Mnemonic	Description/ Code	Factor Loading	Factor Score Coefficient	Residual
Cp1	Q.41/S2029	.9431	.4525	.332
Cp2	Q.43/S2031	.9467	.4542	.322
Cp3	Q.53/S2068	.5463	.2621	.837

Alpha Reliability = .765
Eigenvalue = 2.084

Factor score coefficients are shown in Table 4.2 and the means and standard deviations are shown in Table 4.1. The factor score coefficient (Fsc) was computed using the formula $Fsc = F_L \div E$ (factor loading divided by the eigenvalue). For example, the factor score coefficient for item Cp1 was $.943 \div 2.084 = .452$. Using this formula, and by applying the general formula to the Career Plans variable (Career Plans = $fsc_1\ (Cp1 - m_1)/sd_1 + \ldots + fsc_3\ (Cp3 - m_3)/sd_3$), the standardized score for the final version of the Career Plans composite was calculated as follows:

$$\begin{aligned}\text{Career Plans} = {} & .452(Cp1 - 1.961)/.188 + \\ & .454(Cp2 - 1.966)/.179 + \\ & .262(Cp3 - 1.974)/.156\end{aligned}$$

Attachment

Nine items, Attach1 to Attach9, were originally selected to represent the variable, Attachment, which was defined as the degree of attachment which the subjects had to their family and home community. When subjected to principal components analysis, items were systematically eliminated when their factor loadings failed to reach a level of .40. Five of the nine items were subsequently dropped from the initial equation. (See Table 4.4a, Appendix I.) The final version of the items is depicted in the correlation matrix in Table 4.3. The alpha reliability for this composite was .570 which is relatively low, even though, as Table 4.4 shows, the respective loadings were relatively high. Such a low reliability coefficient indicated that the variable had low internal consistency and the individual questionnaire items may not be good measures of the composite. Normally for this study a variable with such a low alpha reliability would be rejected from further analysis. However, because the concept of community attachment and home and family attachment were considered important influences in the life decisions of Newfoundland youth, the composite was left in the list of independent variables for subsequent regression and path analysis.

Table 4.3

Correlation Matrix for the Attachment Composite

	Attach1	Attach2	Attach3	Attach4
Attach1				
Attach2	.354			
Attach3	.287	.230		
Attach4	.170	.100	.294	
Mean	1.988	1.955	0.904	1.164
Sd	1.279	0.818	0.814	0.371

Determinant of correlation matrix = .712
Kaiser-Meyer-Olkin measure of sampling adequacy = .632

Table 4.4

Measurement Model for the Attachment Composite

Mnemonic	Description/ Code	Factor Loading	Factor Score Coefficient	Residual
Attach1	Q.37/S2022	.7187	.4159	.695
Attach2	Q.60/S2133	.6471	.3744	.762
Attach3	Q.13/L3313001	.7065	.4088	.708
Attach4	Q.17/L3317002	.5421	.3137	.840

Alpha reliability = .570
Eigenvalue = 1.728

The means and standard deviations from Table 4.3 and the factor score coefficients from Table 4.4 were used to calculate the standardized score for the composite. The general formula was applied.

$$\begin{aligned}\text{Attachment} = {} & .416(\text{Attach1} - 1.988)/1.279 + \\ & .374(\text{Attach2} - 1.955)/.818 + \\ & .409(\text{Attach3} - .904)/.814 + \\ & .314(\text{Attach4} - 1.164)/.371\end{aligned}$$

The final composite indicators as selected from the YTLM questionnaires are presented below. The item number, coding descriptor, e.g., S2022, and survey from which it was taken identify the item. S1 and S3 indicate the items were drawn from the instruments used in survey 1 and survey 3. The scoring key shows how each item was scored.

Attach1 = Q. 37, S2022, S1

Where would you prefer to work? *(Circle one)*

I'd like work that is close to home	1
I wouldn't mind going somewhere else in the province where I had relatives	2
I'd go anywhere in the province for a job	3

I'd go anywhere, including other provinces, in order to get a job 4

Scoring key: Recoded so the higher values = greater attachment. That is, (1=4)(2=3)(3=2)(4=1)

Attach2 = Q. 60, S2133, S1

If you were to go to school for your further education/training, where would you want to go? *(Circle one)*

I won't go if I can't live at home 1
I'd prefer to live at home, but would go elsewhere if absolutely necessary ... 2
I'd like to live away from home but still within the province 3
I'd like to go to school somewhere outside the province 4
I would go to school wherever I am accepted 5

Scoring key: Recoded as (1=4)(2=3)(3=2)(4,5=1)

Attach3 = Q. 13, L3313001, S3

Where do you expect to be living in order to pursue your career plans five years from now? *(Check one only)*

In or near my home community .... ☐
Elsewhere in Newfoundland .... ☐
Outside the province .... ☐

Scoring key: In or near. . . = 3, elsewhere in . . . = 2, outside . . . = 1

Attach4 = Q. 17, S3

What is the major reason why you plan to take this career path? *(Check all that apply)*

It will let me work with people .... ☐
* It will allow me to stay near home .... ☐
I will be able to go to a new place to visit or live .... ☐
I feel it will provide me with a secure future .... ☐
I feel it will provide me a good income .... ☐
I like this type of work .... ☐
Other .... ☐

* L3317002
Scoring key: For each indicator, 1 = 2 (yes), 9 = 1 (no response)

Value of Education

Six items were initially selected from the YTLM questionnaires for the composite, Value of Education. Their identifying mnemonics were Valued1 to

Valued6. The variable is defined in terms of the extent to which education is valued in each respondent's home. Through the process of principal components analysis, four items were eliminated because their factor loadings were below .40. (See Table 4.6a, Appendix I.) These rejected items were considered not to accurately represent the composite. Table 4.5 shows the correlation matrix for the final selected items, and their means and standard deviations. Table 4.6 summarizes the results of the principal components analysis indicating the factor loadings, factor score coefficients, and residuals. The alpha reliability for this composite was .634.

Using the appropriate information from Tables 4.5 and 4.6 and by applying the general formula, Fsc_1 (Valued1 - m_1)/sd_1 + Fsc_2 (Valued2 - m_2)/sd_2, the standardized score for the Value of Education composite was calculated as follows:

$$\text{Value of Education} = .554(\text{Valued1} - 1.746)/.429 + .554(\text{Valued2} - 1.808)/.391$$

Table 4.5

Correlation Matrix for the Value of Education Composite

	Valued1	Valued2
Valued1		
Valued2	.628	
Mean	1.746	1.808
Sd	0.429	0.391

Determinant of correlation matrix = .606
Kaiser-Meyer-Olkin measure of sampling adequacy = .500

Table 4.6

Measurement Model for the Value of Education Composite

Mnemonic	Description/ Code	Factor Loading	Factor Score Coefficient	Residual
Valued1	Q.40/S2028	.902	.554	.432
Valued2	Q.42/S2030	.902	.554	.432

Alpha Reliability = .779
Eigenvalue = 1.628

The actual indicators used in the final version of the composite were selected from the questionnaire items in survey 1. They included:

Valued1 = Q. 40, S2028, S1

Which one of the following statements best describes what your father/male guardian thinks you should do after you finish high school?

	Does not care what I do after high school	1
	Might like me to continue my education after high school	2
•	Definitely would like me to continue my education after high school	3
•	Insists that I continue my education after high school	4
	Thinks I should start to work for pay after high school	5
	Wants me to work for the family after high school	6
	I don't know what he would like me to do after high school	7

• Valued1 indicators
Scoring key: Recoded so (1,2,5,6,7=1) and (3,4=2)

Valued2 = Q. 42, S2030, S1

Which one of the following statements best describes what your mother/female guardian thinks you should do after you finish high school?

	Does not care what I do after high school	1
	Might like me to continue my education after high school	2
•	Definitely would like me to continue my education after high school	3
•	Insists that I continue my education after high school	4
	Thinks I should start to work for pay after high school	5
	Wants me to work for the family after high school	6
	I don't know what she would like me to do after high school	7

• Valued2 indicators
Scoring key: (1,2,5,6,7=1)(3,4=2)

Guidance

The Guidance variable related to the use and helpfulness of guidance services which the survey respondents may have had available to them while they were in high school. Four items out of an initial pool of six, denoted as Guid1 to Guid6, were selected in the final version of the composite. (See Table 4.8a, Appendix I.) Table 4.7 shows the correlations, means, and standard deviations for those four items. The two that were eliminated through principal components analysis showed a weak relationship to the composite with factor loadings of less than .40. The alpha reliability for this variable was .610. Table 4.8 presents a measurement model which summarizes the results of the principal components analysis for the final version of the Guidance composite.

Table 4.7

Correlation Matrix for the Guidance Composite

	Guid3	Guid4	Guid5	Guid6
Guid3				
Guid4	.135			
Guid5	.150	.495		
Guid6	.272	.220	.263	
Mean	1.836	1.282	1.400	1.451
Sd	0.721	0.439	0.472	0.403

Determinant of correlation matrix = .637
Kaiser-Meyer-Olkin measure of sampling adequacy = .607

Table 4.8

Measurement Model for the Guidance Composite

Mnemonic	Description/ Code	Factor Loading	Factor Coefficient	Score Residual
Guid3	Q.36a/S2017	.4913	.2745	.871
Guid4	Q.22/L3322006	.7436	.4155	.669
Guid5	Q.23/L3323006	.7708	.4307	.637
Guid6	Q.33d/L3333028	.6333	.3538	.774

Alpha Reliability = .610
Eigenvalue = 1.790

The standardized score for the Guidance composite was calculated following the procedures described previously and which in this case used the means and standard deviations from Table 4.7 and the factor score coefficients from Table 4.8. The calculation was as follows:

$$\begin{aligned}\text{Guidance} = {} & .274(\text{Guid3} - 1.836)/.721 + \\ & .415(\text{Guid4} - 1.282)/.439 + \\ & .431(\text{Guid5} - 1.400)/.472 + \\ & .354(\text{Guid6} - 1.451)/.403\end{aligned}$$

The actual items in the final version of the Guidance composite are presented as they appeared in the survey questionnaires. The question number, coding descriptor, e.g., S2017, and survey number identify the items. The scoring key indicates how each item was scored.

Guid3 = Q. 36a, S2017, S1

How much have you discussed your career plans with the following people?

	A lot	A little	Not at all
Friends	1	2	3

Father/guardian	1	2	3
Mother/guardian	1	2	3
Person in the job	1	2	3
Relatives	1	2	3
School Counsellor*	1	2	3
Teacher	1	2	3
Nobody	1	2	3

Other (please specify) ______________________________

* S2017
Scoring key: Recoded so that "a lot" = 3 and "not at all" = 1

Guid4 = Q. 22, L3322006, S3

There are people/places where you may get help in looking for jobs. Please indicate if you were ever in contact with some of these since January 1990 and if they were helpful or not. *(Check one box in each line)*

	No Contact	Helpful	Somewhat Helpful	Not Helpful
Canada Employment and Immigration Centre	☐	☐	☐	☐
Career Information Hot Line	☐	☐	☐	☐
Youth Employment Strategy Program	☐	☐	☐	☐
Community College	☐	☐	☐	☐
Social Services	☐	☐	☐	☐
School guidance * counsellor, teacher	☐	☐	☐	☐
Parents	☐	☐	☐	☐
Friends/relatives	☐	☐	☐	☐

*L3322006
Scoring key: Recoded so "no contact" and "not helpful" = 1 and "helpful" and "somewhat helpful" = 2

Guid5 = Q. 23, L3323006, S3

There are people/places where you may get help in planning to continue your education. Please indicate if you were in contact with any of the following during 1990, and if they were helpful or not. *(Check one box in each line)*

	No Contact	Helpful	Somewhat Helpful	Not Helpful
Canada Employment and Immigration Centre	☐	☐	☐	☐

Career Information Hot Line	☐	☐	☐	☐
Youth Employment Strategy Program	☐	☐	☐	☐
Community College	☐	☐	☐	☐
Social Services	☐	☐	☐	☐
School guidance * counsellor, teacher	☐	☐	☐	☐
Parents	☐	☐	☐	☐
Friends/relatives	☐	☐	☐	☐

*L3323006

Scoring key: Recoded so "no contact" and "not helpful" = 1, "helpful" and "somewhat helpful" = 2

Guid6 = Q. 33d, L3333028, S3

Think back and tell how important were the following in helping you decide to take this program? *(Check one box in each line)*

	No Contact	Helpful	Not Helpful
Parents	☐	☐	☐
Friends/relatives	☐	☐	☐
Teacher	☐	☐	☐
High School counsellor*	☐	☐	☐
Career information hot line	☐	☐	☐
CEIC	☐	☐	☐
Youth Employment Strategy program	☐	☐	☐
Employer	☐	☐	☐
Other	☐	☐	☐

*L3333028

Scoring key: Recoded so "no contact" and "not helpful" = 1 and "helpful" = 2

Career Information

The linear composite, Career Information, was analyzed by principal components analysis using the correlation matrix displayed in Table 4.9. Originally, 15 instrument items were identified for the composite, 8 of which were dropped from further analysis when their factor loadings fell below .40. (See Table 4.10a, Appendix I.) The items were identified as Cinf1 to Cinf15.

Table 4.9

Correlation Matrix for the Career Information Composite

	Cinf2	Cinf3	Cinf4	Cinf5	Cinf6	Cinf8	Cinf9
Cinf2							
Cinf3	.293						
Cinf4	.260	.276					
Cinf5	.541	.276	.314				
Cinf6	.343	.107	.054	.344			
Cinf8	.304	.236	.195	.275	.194		
Cinf9	.232	.157	.172	.241	.172	.180	
Mean	.895	.660	.448	.840	1.335	.306	.263
Sd	.983	.949	.816	1.018	1.221	.675	.600

Determinant of correlation matrix = .3549
Kaiser-Meyer-Olkin measure of sampling adequacy = .7828

The composite referred to the availability of information on occupations and careers. Table 4.9 shows the correlations, means, and standard deviations for the final version of the composite. Table 4.10 displays the results of the principal components analysis for the final selected items or identifiers. It shows the composite mnemonic, the factor loading for each identifier, the factor score coefficient, and the residual for each item. The alpha reliability for the composite was .695.

Using information from Table 4.9 and Table 4.10, the standardized score for the Career Information composite was calculated as follows:

$$\begin{aligned}\text{Career Information} = {} & .299(\text{Cinf2} - .895)/.983 + \\ & .215(\text{Cinf3} - .660)/.949 + \\ & .207(\text{Cinf4} - .448)/.816 + \\ & .301(\text{Cinf5} - .840)/1.018 + \\ & .205(\text{Cinf6} - 1.335)/1.221 + \\ & .220(\text{Cinf8} - .306)/.675 + \\ & .186(\text{Cinf9} - .263)/.600\end{aligned}$$

Table 4.10

Measurement Model for the Career Information Composite

Mnemonic	Description/ Code	Factor Loading	Factor Score Coefficient	Residual
Cinf2	Q.59/S2121	.7593	.2993	.651
Cinf3	Q.59/S2122	.5457	.2151	.838
Cinf4	Q.59/S2123	.5242	.2066	.851
Cinf5	Q.59/S2125	.7626	.3006	.647
Cinf6	Q.59/S2126	.5200	.2050	.854
Cinf8	Q.59/S2128	.5584	.2201	.829
Cinf9	Q.59/S2129	.4728	.1864	.881

Alpha Reliability = .695
Eigenvalue = 2.537

The final selection of indicators used in the composite came from one general question in survey 1. The multiple coding descriptors, e.g., s2121, s2122, and so on, show the indicators that were selected and the scoring key shows how the variables were scored.

Cinf2 - 6, 8, 9 = Q. 59, survey 1

Following is a list of institutions. Complete columns a, b, c and d.
Column a. Have you sent an application to the institution?
Column b. Have you visited the institution?
Column c. Have you read information about the institution?
Column d. Have you heard a talk by a visitor from the institution at school?

Institutions:		a Sent Application	b Visited	c Read Information	d Heard Speaker
S2121	Cabot Institute				
S2122	Community College				
S2123	Fisher Institute				
	Hospital Nursing School				
S2125	Marine Institute				
S2126	Memorial University St. John's Campus				
	Sir Wilfred Grenfell College				
S2128	Private Career Colleges				
S2129	Police Academy				
	Other institution in Newfoundland				
	Institution outside Newfoundland				
	Armed Forces Plan				

Scoring key: Values in each row of each column were either 1 or 0. Scores in rows in columns b, c, and d were summed to get a combined score of 0 to 3. Column a was not included in the scoring.

Well-being

Nineteen items were selected for the composite variable, Well-being, a concept relating to the respondents' general satisfaction with life and relative absence of problems or anxiety. They were labelled as Wb1 to Wb19 and subjected to principal components analysis based on the correlation matrix in Table 4.11.

Ten items showed a factor loading greater than .40 and were considered good discriminants for this composite. The other nine items had factor loadings below .40 and were dropped from further analysis. (See Table 4.12a, Appendix I for the complete list.) Table 4.12 shows the respective factor loading and the factor score coefficient along with the residual for each item. The alpha reliability for the variable was .768.

A standardized score for the composite was computed by applying the general formula previously described. The scores of each respondent to each relevant instrument item were calculated and added as follows:

$$
\begin{aligned}
\text{Well-being} = {} & .180(Wb1 - 3.132)/.554 + \\
& .206(Wb2 - 2.985)/.669 + \\
& .126(Wb8 - 3.219)/.592 + \\
& .210(Wb9 - 2.953)/.703 + \\
& .195(Wb10 - 2.466)/.785 + \\
& .135(Wb12 - 2.504)/.608 + \\
& .184(Wb14 - 2.244)/.714 + \\
& .134(Wb16 - 2.531)/.618 + \\
& .176(Wb17 - 1.825)/.762 + \\
& .180(Wb19 - 2.439)/.669
\end{aligned}
$$

Table 4.11

Correlation Matrix for the Well-being Composite

	Wb1	Wb2	Wb8	Wb9	Wb10	Wb12	Wb14	Wb16	Wb17	Wb19
Wb1										
Wb2	.419									
Wb8	.310	.268								
Wb9	.363	.652	.278							
Wb10	.381	.386	.232	.418						
Wb12	.154	.142	.095	.158	.197					
Wb14	.200	.210	.097	.245	.273	.233				
Wb16	.111	.118	.034	.122	.135	.161	.308			
Wb17	.138	.202	.077	.212	.209	.191	.468	.379		
Wb19	.181	.192	.107	.209	.243	.369	.353	.318	.404	
Mean	3.132	2.985	3.219	2.953	2.466	2.504	2.244	2.531	1.825	2.439
Sd	.544	.669	.592	.703	.785	.608	.714	.618	.762	.669

Determination of correlation matrix = .112
Kaiser-Meyer-Olkin measure of sampling adequacy = .801

Table 4.12

Measurement Model for the Well-being Composite

Mnemonic	Description/ Code	Factor Loading	Factor Score Coefficient	Residual
Wb1	Q.5/L335001	.5858	.1799	.810
Wb2	Q.5/L335002	.6722	.2065	.740
Wb8	Q.5/L335008	.4089	.1256	.912
Wb9	Q.5/L335010	.6851	.2104	.728
Wb10	Q.6/L336001	.6366	.1955	.771
Wb12	Q.19/L3319002	.4410	.1355	.897
Wb14	Q.19/L3319004	.5996	.1842	.800
Wb16	Q.19/L3319006	.4377	.1345	.899
Wb17	Q.19/L3319007	.5739	.1763	.819
Wb19	Q.19/L3319009	.5863	.1801	.810

Alpha Reliability = .768
Eigenvalue = 3.225

Items from the questionnaire used in survey 3 that were included in the final version of the composite are given below. The item number, survey number, coding descriptor e.g., L335001, is given for each indicator that contributed to the composite. A scoring key is provided to show how the variables were scored.

Wb1, 2, 8, 9, = Q. 5, S3

Would you tell us how your life has been during the last year?
In 1990, all in all, how satisfied were you with: ***(Check one box in each line)***

		Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied
L335001	Life as a whole	☐	☐	☐	☐
L335002	Outlook for the future	☐	☐	☐	☐
	Standard of living	☐	☐	☐	☐

	Where you lived	☐	☐	☐	☐
	Money you had this year	☐	☐	☐	☐
	Social life	☐	☐	☐	☐
	Spare/leisure time activities	☐	☐	☐	☐
L335008	Level of independence	☐	☐	☐	☐
	State of health	☐	☐	☐	☐
L335010	General career outlook	☐	☐	☐	☐

Scoring key: Very satisfied = 4, satisfied = 3, dissatisfied = 2, very dissatisfied = 1

Wb10 = Q. 6, L336001, S3

Looking back since when you were in high school, how would you rate the way your life has gone since leaving high school? *(Check one box only)*

Not nearly as well as I expected .... ☐
Not quite as well as I expected .... ☐
Better than I expected .... ☐
Much better than I expected .... ☐

Scoring key: Scored in sequence ("not nearly. . ." = 1)("much better. . ." = 4)

Wb12, 14, 16, 17, 19 = Q. 19, S3

Some people have problems in getting started after they leave high school. Please indicate how much each of the following has been a problem for you. *(Tick one box in each line.)*

		Not a problem	Somewhat of a problem	A serious problem
	Finding a place to live	☐	☐	☐
L3319002	Managing personal finances	☐	☐	☐
	Finding spare time	☐	☐	☐
L3319004	Finding a job you liked	☐	☐	☐
	Knowing how to look for a job	☐	☐	☐
L3319006	Being too young to get good jobs	☐	☐	☐
L3319007	The scarcity of jobs	☐	☐	☐
	Not having enough experience	☐	☐	☐
L3319009	Having money to look for work	☐	☐	☐

Scoring key: "Not a problem"=3, "somewhat a problem"=2, "a serious problem"=1

Vocational Self-Concept

Initially, 21 questions from the two YTLM questionnaires were used in the first factor analysis for the Vocational Self-concept variable. The composite referred to the views the respondents had about how easy it would be for them to learn certain jobs. These views were taken as an indication of how the respondents saw themselves as workers. The term, Vocational Self-Concept, is used throughout the thesis because it was the term originally chosen for this composite. However, a more appropriate term is "perception of occupational performance" in that the indicators of the composite extracted from the survey instrument pertain to such a perception. Marsh (1984) pointed out the inherent subjectivity of a construct such as self-concept of which the nomenclature used here is a reflection. Recognizing this subjectivity, selection of the items for a vocational self-concept composite was considered to not be a severe departure from convention. Items identified as Vocs1 to Vocs21 were eliminated as their respective factor loading dropped below .40. Successive factor analyses retained six items in the final analysis. Table 4.13 gives the parameters of the retained indicators and Table 4.14a, Appendix I, shows the full list of the original indicators. Table 4.14 shows the correlations, means, and standard deviations of the items in the final version. The composite had an alpha reliability of .730.

Table 4.13
Correlation Matrix for the Vocational Self-Concept Composite

	Vocs11	Vocs12	Vocs13	Vocs14	Vocs15	Vocs19
Vocs11						
Vocs12	.377					
Vocs13	.275	.548				
Vocs14	.256	.382	.297			
Vocs15	.206	.225	.157	.460		
Vocs19	.305	.382	.379	.236	.096	
Mean	2.420	1.529	1.822	1.544	1.999	2.213
Sd	.737	.643	.718	.676	.786	.800

Determinant of correlation matrix = .302
Kaiser-Meyer-Olkin measure of sampling adequacy = .748

Table 4.14

Measurement Model for the Vocational Self-concept Composite

Mnemonic	Description/ Code	Factor Loading	Factor Score Coefficient	Residual
Vocs11	Q.65/S3005	.6098	.2382	.792
Vocs12	Q.65/S3006	.7828	.3057	.622
Vocs13	Q.65/S3007	.7094	.2771	.705
Vocs14	Q.65/S3008	.6670	.2605	.745
Vocs15	Q.65/S3009	.4996	.1951	.866
Vocs19	Q.65/S3013	.6197	.2601	.789

Alpha Reliability = .730
Eigenvalue = 2.560

Information from Table 4.13 and Table 4.14 was applied to the previously used general formula to compute the standardized score for the composite:

$$
\begin{aligned}
\text{Vocational Self-concept} = {} & .238(\text{Vocs11} - 2.420)/.737 + \\
& .306(\text{Vocs12} - 1.529)/.643 + \\
& .277(\text{Vocs13} - 1.822)/.718 + \\
& .260(\text{Vocs14} - 1.544)/.676 + \\
& .195(\text{Vocs15} - 1.999)/.786 + \\
& .260(\text{Vocs19} - 2.213)/.800
\end{aligned}
$$

The six indicators in the final version of the Vocational Self-concept composite are given below along with their respective coding descriptor. The scoring key is given below the questionnaire item.

Vocs11 - 15, 19 = Q. 65, S1

Would it be very easy, easy, somewhat difficult or very difficult for you to learn to do the following jobs, assuming you wanted to?

		Very Easy	Easy	Somewhat Difficult	Very Difficult
	Clerk in a store	___	___	___	___
S3005	Manager of a store	___	___	___	___

S3006	Dentist	___	___	___	___
S3007	Nurse	___	___	___	___
S3008	Naval Architect	___	___	___	___
S3009	Electrician	___	___	___	___
	Typist	___	___	___	___
	Truck Driver	___	___	___	___
	Cook	___	___	___	___
S3013	Teacher	___	___	___	___
	Deck Hand on a Trawler	___	___	___	___
	Fish Plant Worker	___	___	___	___

Scoring key: Recoded so "very easy"=4, "easy"=3, "somewhat difficult"=2, and "very difficult"=1

Significant Others

Table 4.15 and Table 4.16 show the correlation matrix and the principal components analysis respectively for the final version of the composite, Significant Others. The definition of this concept applied to the differences in perceptions which respondents had of the influence of their parents compared to the influence of friends and others on their choice to attend or not attend postsecondary education. Nine identifiers, labelled Sig1 to Sig9, were originally computed in the first analysis. Three were rejected because their factor loadings were less than the .40 standard set for retention of items considered representative of a composite. (See Table 4.16a, Appendix I for the complete list of items used for the Significant Others composite.) The alpha reliability for the composite was .649.

Information from Tables 4.15 and 4.16 was used in the general formula described previously to calculate a standardized score for the composite, as follows:

$$\begin{aligned}\text{Significant Others} &= .256(\text{Sig1} - 2.413)/.575 + \\ &\quad -.309(\text{Sig2} - 1.597)/.721 +\end{aligned}$$

-.337(Sig3 - 1.435)/.610 +
-.222(Sig4 - 1.684)/.672 +
.277(Sig5 - 1.858)/.616 +
.240(Sig6 - 1.625)/.629

Table 4.15
Correlation Matrix for the Significant Others Composite

Mnemonic	Sig1	Sig2	Sig3	Sig4	Sig5	Sig6
Sig1						
Sig2	-.177					
Sig3	-.252	.558				
Sig4	.177	-.163	-.169			
Sig5	.264	-.201	-.278	.214		
Sig6	.209	-.169	-.194	.213	.235	
Mean	2.413	1.597	1.435	1.684	1.858	1.625
Sd	0.575	0.721	0.610	0.672	0.616	0.629

Determinant of correlation matrix = .466
Kaiser-Meyer-Olkin measure of sampling adequacy = .690

Table 4.16
Measurement Model for the Significant Others Composite

Mnemonic Residual	Description/ Code	Factor Loading	Factor Score Coefficient	
Sig1	Q.36a/S2012	.5585	.2559	.829
Sig2	Q.36a/S2013	-.6749	-.3093	.738
Sig3	Q.36a/S2014	-.7348	-.3367	.678
Sig4	Q.36a/S2015	.4854	.2224	.874
Sig5	Q.36a/S2016	.6045	.2770	.797
Sig6	Q.36a/S2018	.5284	.2398	.852

Alpha Reliability = .649
Eigenvalue = 2.182

Six indicators were included in the final version of the Significant Others composite. The indicators are shown as they appeared in the questionnaire item, 36a, from survey 1. The coding descriptors show the actual indicators and the scoring key shows how the item was scored.

Sig1 - 6 = Q. 36a, S1

How much have you discussed your career plans with the following people?

		A lot	A little	Not at all
S2012	Friends	1	2	3
S2013	Father/guardian	1	2	3
S2014	Mother/guardian	1	2	3
S2015	Person in the job	1	2	3
S2016	Relatives	1	2	3
	School Counsellor	1	2	3
S2018	Teacher	1	2	3
	Nobody	1	2	3
	Other (please specify)__________			

Scoring key: Recoded so higher values = more perceived influence; i.e., (1=3)(3=1)

Barriers

Defined as perceived barriers to postsecondary participation, 27 identifiers, labelled Bar1 to Bar27, were initially used in the analysis for the Barriers variable. The factor loadings of 22 identifiers ultimately fell below .40 through a series of principal components analyses. (See Table 4.18a, Appendix I.) The correlation, mean, and standard deviation of each factor item that was retained in the final version of the composite are depicted in Table 4.17. Results of the final principal components analysis are shown in Table 4.18. The alpha reliability was .675.

Table 4.17

Correlation Matrix for the Barriers Composite

	Bar9	Bar11	Bar17	Bar20	Bar22
Bar9					
Bar11	.299				
Bar17	.701	.553			
Bar20	.158	.098	.150		
Bar22	.198	.094	.170	.472	
Mean	1.153	1.163	1.975	1.329	1.724
Sd	0.360	0.369	1.767	0.546	0.712

Determinant of correlation matrix = .215
Kaiser-Meyer-Olkin measure of sampling adequacy = .625

Table 4.18

Measurement Model for the Barriers Composite

Mnemonic	Description/ Code	Factor Loading	Factor Score Coefficient	Residual
Bar9	Q.54a/S2069	.7904	.3890	.613
Bar11	Q.54a/S2071	.6564	.3766	.755
Bar17	Q.54b/S2078	.8679	.4585	.496
Bar20	Q.21/L3321004	.4419	-.0729	.897
Bar22	Q.21/L3321006	.4692	-.0560	.883

Alpha Reliability = .675
Eigenvalue = 2.224

By using the means and standard deviations from Table 4.17 and the factor loadings and factor coefficients from Table 4.18, and by application of the general formula used in previous equations above, a standardized score for the Barriers composite was calculated as follows:

$$\begin{aligned}\text{Barriers} = {} & .390(\text{Bar9} - 1.153)/.360 + \\ & .377(\text{Bar11} - 1.163)/.369 + \\ & .458(\text{Bar17} - 1.975)/1.767 + \\ & -.073(\text{Bar20} - 1.329)/.546 + \\ & -.056(\text{Bar22} - 1.724)/.712\end{aligned}$$

The actual items that were used in the final version of the composite are presented below. The question number, coding descriptor, e.g., s2069, survey number, and scoring key are given for each item.

Bar9, 11 = Q. 54a. S1

If you may not continue your education/training next year, please circle all the reasons that apply. If you have a reason that is not listed, please write it down.

S2069	I may not have enough money for school	1
	I have to go far from home	2
S2071	I would like to start supporting myself	3
	I don't know if I have the ability to do well in post-secondary education	4
	I haven't been able to decide what program to take	5
	I may stay at home and keep house	6
	Academic qualifications inadequate	7
	Desire work experience first	8
	Other ______________________________	

Scoring key: Recoded based on frequencies so that higher values = greater barriers; i.e., (2,7,8=1)(1=6)(3=5)(5=3)(6=2)

Bar17 = Q. 54b, S2078, S1

Which of the above would be the **most important** reason for **not** continuing your education next year? ______________________

Scoring key: Same as for Q.54a above

Bar20, 22 = Q. 21, S3

Some young people have problems when deciding to get further education. Please indicate how much of a problem each has been for you. *(Tick one box in each line)*

		Not a problem	Somewhat of a problem	A serious problem
	Finding time to go to school	☐	☐	☐
	Finding available courses near where you live	☐	☐	☐
	Meeting entrance requirements	☐	☐	☐
L3321004	Having to work to support yourself/ family	☐	☐	☐
	Getting information about courses	☐	☐	☐
L3321006	Getting money to pay education	☐	☐	☐

Scoring key: "Not a problem"=1, "somewhat a problem"=2, "a serious problem"=3

Summary

This chapter described the principal components analyses that were carried out on the linear composites used in the study. Nine composites were analyzed and described. A greater number of indicators were initially subjected to principal components analysis than were retained in the final version of each composite.

The process of analysis was similar for all composite variables. For example, items that were hypothesized to pertain to a particular linear composite were selected from the two separate questionnaires administered in the first and third surveys of the YTLM longitudinal study. (See Chapter 3.) These items were analyzed through the statistical method of principal components analysis and given a factor loading score. Items with scores or loadings of .40 or greater were retained for further analysis. Items with scores less than .40 were discarded as not being representative of the composite under consideration. In most cases, several analyses were carried out before the final version of the composite emerged.

When the final version was identified, a standardized score was computed for it by utilizing a general arithmetic formula that calculated the respective item scores and then added them to obtain a composite score. The specific items that were selected for the development of the final version of the composite were presented in the chapter as they originally appeared in the survey questionnaires. Scoring keys were given to indicate how the respective items were scored.

Chapter 5

Reporting of the Results

Introduction

This chapter provides the estimations of the effects of the 17 personal, family, school, community, and intervening variables on Participation in Postsecondary Education. The independent variables in each category were:

Personal Variables
- . Gender
- . Career Plans
- . Well-being
- . Learning Style

Family Variables
- . Value of Education in the Family
- . Family Size (number of siblings)

School Variables
- . Guidance
- . Career Information
- . Mathematics Program

Community Variables
- . Geographical Region
- . Rurality (Rural/Urban)
- . Attachment

Intervening Variables
- . Academic Achievement
- . Academic Attainment
- . Vocational Self-concept
- . Significant Others
- . Barriers

Estimates in the form of correlation and regression coefficients are reported for three models: a male model, a female model, and a fully recursive or total group model in which gender is included as a dichotomous variable. Descriptive statistics of the variables used in the multiple regression analyses for the extended models are shown in tabular form in Appendix H. Information is presented in tabular form throughout the chapter and the tables are analyzed in conjunction with the relevant independent variables.

A process of incremental model building structures the chapter. First, a series of tables showing intercorrelations among the variables in the three different models are presented. Second, multiple regression parameters resulting from the regression of each intervening variable on the source or exogenous variables are shown separately for males and females. Third, an extended model for males and females shows the regression parameters for the source variables plus the intervening variables on Participation. Fourth, a total group model is presented. In this model, the criterion variable, Participation, is regressed on all the exogenous variables, including Gender, plus all the endogenous variables. Fifth, a model is presented which estimates the direct effects, indirect effects, and total effects of the independent variables on the dependent variable. The models and their parameters are congruent with the research questions developed for the study.

Descriptive Statistics

Descriptive statistics give an indication of the nature of the variables and their distribution characteristics. If the distribution of the variables are reasonably symmetrical, they will not constrain the correlations. Generally, the variables in the study were normally distributed. The means, standard deviations, kurtosis, skewness, and number of cases for each variable in the male, female, and total group models are shown in Appendix H. Comparisons between models can best be made by direct reference to the appropriate tables in this Appendix. The measurement characteristics of each variable are shown in Table 3.3, Chapter 3.

Results From the Survey Data

A number of subsidiary questions were developed in Chapter 1 and a series of hypotheses were advanced in Chapter 2 to provide a basis for estimating the effects of various influences on Postsecondary Participation. These questions and hypotheses emanated from both the empirical perspectives generated through the stakeholder surveys and interview protocols, as well as the theoretical perspectives generated from the literature review. The reporting proceeds from the order in which the independent variables appeared in the conceptual framework. (See Figure 2.1, Chapter 2.) Limited reporting is given to the correlation matrices and the regression coefficient parameters for the intervening models in order to focus on the parameter estimates in the extended models for males and females and for the total group model. The extended models most appropriately conform to the theoretical framework guiding the study while the intervening models help to address the ancillary research question. Results are also reported for the direct, indirect, and total effects model.

Tables 5.1 to 5.3 show the correlation matrices for males, females, and the total group model. None of the independent variables were highly intercorrelated which is desirable because it eliminated multicollinearity as a potential problem. Multicollinearity occurs when some or all of the independent variables are very highly intercorrelated which then becomes problematic for multiple regression in that it is prevented from accurately evaluating the relative importance of the independent variables (Norusis, 1988, p. 232). The highest correlation coefficient in any of the matrices was 0.391.

Intercorrelational Analysis

A cursory examination of the matrices shows some similarities and some differences among selected variables. For example, Region 3 correlated with Rural/Urban at -0.227 in all three matrices. This suggested that respondents from communities in the central region in the province lived in largely rural communities. The largest centres of population in Newfoundland are in Region 1, the Avalon Peninsula; Region 4, western Newfoundland; and Region 5, Labrador. In Region 4, more of the males lived in urban areas and more of the females lived in rural areas but differences were very small; a 0.042 coefficient for males and a negligible -0.006 for females. The variable, Advanced Mathematics Program in high school, was shown to have comparable correlation coefficients with the Rural/Urban variable in all three matrices: 0.178, males; 0.174, females; and 0.176, total group. This indicated that most respondents, whether male or female, who took advanced mathematics in high school came from urban areas. The correlations between Barriers and the Rural/Urban variable had slightly different coefficients in the three samples although the direction of the association was similar. For example, r = -0.103 in the male model; r = -0.055 in the female model; and r = -0.073 for the total group model. The negative sign indicated that in all three models, the perceived barriers, however small, were more pronounced in rural areas.

The extent to which education was valued in the home favoured females from urban areas. In the three models, the value of education in the home correlated positively for urban areas over rural areas but was most highly correlated in the extended female model. In other words, the correlations showed that females from urban areas were more likely to come from a home where education was valued than were males, but that both males and females from urban areas were more likely to be from homes where a high value was placed on education than were males and females from rural areas. In terms of Postsecondary Participation, females from urban areas tended to participate in higher education more than males did, and both tended to participate more than did either rural males or rural females. The correlation coefficient in the male model between Rural/Urban and Participation was 0.083, and in the female model, 0.116. Both correlations were statistically significant.

The four independent variables that had the highest correlations with Participation in Postsecondary Education, the criterion variable, were Academic Achievement, Barriers, Value of Education, and Advanced Mathematics. This was true for both males and females with the variables in the same order in both matrices. All were statistically significant at the .01 level. The correlation coefficients between Academic Achievement and Participation were 0.310 for males and 0.332 for females. The positive direction of the relationship meant that the higher the academic achievement in high school, the greater was the likelihood that respondents would enter some form of postsecondary education.

Barriers to participation in postsecondary education were perceived to be greater by males than by females; r = -0.305 and -0.273 in the male and female models respectively. That is, males saw the barriers to be more instrumental than did females to their going on to higher education. Both correlation coefficients were statistically significant at the .01 level. The direction of the relationship suggested that the greater the perceived barriers, the less likely were respondents to participate in further education. The influence of the value of education in the home on participation was positive--r=0.286 for males and r=0.275 for females. The interpretation is that the more that education was esteemed at home, the more likely it was that both male and female children would continue with further education after high school. The correlation coefficients between Advanced Mathematics and Participation were comparable, e.g., r=0.238 for males and r=0.219 for females. In both samples, having taken advanced mathematics in high school was a good indicator that the respondents would participate in postsecondary education.

Correlation coefficients between Career Plans and Participation were slightly higher for females than for males--r=0.150, females, and r=0.107, males. This implied that females tended to plan slightly more than males did to go on to

Table 5.1

Correlations, Means, and Standard Deviations of Variables Used in the Regression Model (Males)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.R_U												
2.REG 2	-.117											
3.REG 3	-.227	-.241										
4.REG 4	.042	-.168	-.293									
5.REG 5	.106	-.085	-.149	-.104								
6.PLANS	-.023	.029	-.016	.022	-.005							
7.FAMSIZE	-.151	.034	.034	.009	-.030	-.023						
8.ATTACH	.105	-.054	-.038	-.075	-.068	-.045	.031					
9.VALUED	.040	-.012	-.076	-.026	.004	.165	-.125	-.052				
10.GUIDANCE	.068	-.003	-.113	-.058	-.021	-.064	.014	.086	-.066			
11.CAREINFO	-.127	-.013	.005	-.008	-.008	.055	.003	-.039	.164	-.076		
12.ADVMATH	.178	-.060	-.058	.066	-.019	.083	-.109	-.046	.206	-.039	.051	
13.WELLBE	.091	-.039	-.027	-.004	.009	.069	-.077	.021	.056	-.019	-.028	.144
14.LSTYLE	.041	.030	-.036	.016	-.053	.013	-.038	-.000	.044	-.009	.013	.028
15.AVG	.071	-.033	-.012	-.001	-.028	.126	-.093	-.074	.234	-.055	.079	.359
16.HSGRD	.037	-.035	-.014	.016	.035	.053	-.045	-.048	.199	-.015	.113	.135
17.VOCSELF	-.006	-.022	-.053	.063	.008	-.017	-.086	-.086	.091	-.023	.060	.107
18.SIGOTHS	-.064	-.039	-.012	.054	.055	-.072	.125	.005	-.090	-.043	.025	-.037
19.BARRIERS	-.103	-.022	.041	.023	.011	-.082	.106	.065	-.305	.016	.053	-.186
20.PART	.083	.037	-.085	-.030	-.030	.107	-.118	-.066	.286	-.004	.115	.238
MEAN	1.431	.121	.296	.170	.050	-.063	2.762	-.009	-.091	-.901	-.075	.182
SD	.495	.326	.457	.375	.218	1.103	2.020	.904	1.058	.207	.999	.386

Codes: R-U=rural/urban; Reg 2-5=region; Plans=career plans; Famsize=family size; Attach=attachment; Valued=value of education; Guidance=guidance; Careinfo=career information; Advmath=advanced mathematics; Wellbe=well-being; Lstyle=learning style; Avg=academic achievement; Hsgrd=high school graduation; Vocself=vocational self-concept; Sigoths=significant others; Barriers=barriers; Part=participation

Table 5.1 (Cont'd)

Correlations, Means, and Standard Deviations of Variables Used in the Regression Model (Males)

	13.	14.	15.	16.	17.	18.	19.	20.
1.R_U								
2.REG 2								
3.REG 3								
4.REG 4								
5.REG 5								
6.PLANS								
7.FAMSIZE								
8.ATTACH								
9.VALUED								
10.GUIDANCE								
11.CAREINFO								
12.ADVMATH								
13.WELLBE								
14.LSTYLE	.012							
15.AVG	.125	.084						
16.HSGRD	.062	.045	.294					
17.VOCSELF	.064	.040	.120	.057				
18.SIGOTHS	-.093	-.017	-.031	-.023	-.026			
19.BARRIERS	-.059	-.091	-.208	-.114	-.104	.077		
20.PART .126	.077	.310	.196	.087	-.035	-.305		
MEAN	-.026	2.252	63.539	1.916	.041	-1.003	.070	.631
SD	.997	.964	13.573	.273	1.009	.630	.994	.483

Codes: R-U = rural/urban; Reg 2-5 = region; Plans = career plans; Famsize = family size; Attach = attachment; Valued = value of education; Guidance = guidance; Careinfo = career information; Advmath = advanced mathematics; Wellbe = well-being; Lstyle = learning style; Avg = academic achievement; Hsgrd = high school graduation; Vocself = vocational self-concept; Sigoths = significant others; Barriers = barriers; Part = participation

Table 5.2

Correlations, Means, and Standard Deviations of Variables Used in the Regression Model (Females)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.R_U												
2.REG 2	-.147											
3.REG 3	-.227	-.238										
4.REG 4	-.006	-.172	-.281									
5.REG 5	.097	-.083	-.135	-.098								
6.PLANS	.019	.005	-.008	-.013	-.014							
7.FAMSIZE	-.181	.058	.044	-.023	.019	-.081						
8.ATTACH	.085	-.037	-.066	-.100	-.063	-.069	.055					
9.VALUED	.082	-.013	-.053	-.021	-.002	.188	-.172	-.111				
10.GUIDANCE	.072	-.001	-.138	.001	-.038	-.037	.002	.106	-.053			
11.CAREINFO	-.139	-.005	.097	-.025	-.081	.087	.036	-.010	.075	-.120		
12.ADVMATH	.174	-.049	-.034	.011	-.013	.075	-.104	-.095	.140	.011	.016	
13.WELLBE	.121	-.061	-.010	-.037	-.001	.053	-.066	-.020	.106	.024	-.018	.154
14.LSTYLE	.031	.017	-.029	-.019	.002	.023	.010	-.025	.049	-.010	-.020	.036
15.AVG	.078	-.045	-.015	-.026	-.069	.099	-.110	-.144	.214	-.001	.098	.391
16.HSGRD	.042	-.027	.034	-.035	-.018	.059	-.052	-.035	.132	-.036	.118	.103
17.VOCSELF	.054	-.055	-.009	.003	-.013	.029	-.057	-.091	.090	-.052	.008	.144
18.SIGOTHS	-.097	-.016	.030	.012	-.042	-.013	.113	-.019	-.094	-.006	.065	-.055
19.BARRIERS	-.055	-.014	.049	.057	-.041	-.132	.108	.102	-.310	.037	-.006	-.154
20.PART	.116	.008	-.071	-.035	.008	.150	-.136	-.078	.275	.006	.100	.219
MEAN	1.426	.127	.280	.169	.045	.039	2.911	.003	.084	-.948	.066	.177
SD	.495	.333	.449	.375	.207	.879	2.231	.983	.926	.225	.996	.381

Codes: R-U = rural/urban; Reg 2-5 = region; Plans = career plans; Famsize = family size; Attach = attachment; Valued = value of education; Guidance = guidance; Careinfo = career information; Advmath = advanced mathematics; Wellbe = well-being; Lstyle = learning style; Avg = academic achievement; Hsgrd = high school graduation; Vocself = vocational self-concept; Sigoths = significant others; Barriers = barriers; Part = participation

Table 5.2 (Cont'd)

Correlations, Means, and Standard Deviations of Variables Used in the Regression Model (Females)

	13.	14.	15.	16.	17.	18.	19.	20.
1.R_U								
2.REG 2								
3.REG 3								
4.REG 4								
5.REG 5								
6.PLANS								
7.FAMSIZE								
8.ATTACH								
9.VALUED								
10.GUIDANCE								
11.CAREINFO								
12.ADVMATH								
13.WELLBE								
14.LSTYLE	.006							
15.AVG	.161	.039						
16.HSGRD	.066	-.015	.282					
17.VOCSELF	.099	.027	.189	.075				
18.SIGOTHS	-.062	-.010	.054	.027	.007			
19.BARRIERS	-.090	-.093	-.209	-.098	-.076	.019		
20.PART	.177	.048	.332	.218	.108	.003	-.273	
MEAN	.037	2.314	65.496	1.949	-.040	-.899	-.081	.722
SD	.929	.964	13.209	.218	.987	.614	.924	.448

Codes: R-U = rural/urban; Reg 2-5 = region; Plans = career plans; Famsize = family size; Attach = attachment; Valued = value of education; Guidance = guidance; Careinfo = career information; Advmath = advanced mathematics; Wellbe = well-being; Lstyle = learning style; Avg = academic achievement; Hsgrd = high school graduation; Vocself = vocational self-concept; Sigoths = significant others; Barriers = barriers; Part = participation

Table 5.3

Correlations, Means, and Standard Deviations of Variables Used in the Regression Model (Integrated)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.GENDER												
2.R_U	-.005											
3.REG 2	.009	-.133										
4.REG 3	-.018	-.227	-.239									
5.REG 4	-.001	.017	-.170	-.287								
6.REG 5	-.012	.101	-.084	-.142	-.101							
7.PLANS	.047	-.003	.018	-.014	.005	-.009						
8.FAMSIZE	.032	-.168	.048	.039	-.009	-.024	-.049					
9.ATTACH	.005	.094	-.044	-.053	-.089	-.065	-.056	.045				
10.VALUED	.085	.060	-.012	-.066	-.024	.000	.178	-.145	-.081			
11.GUIDANCE	-.065	.069	-.002	-.126	-.024	-.029	-.053	-.007	.097	-.061		
12.CAREINFO	.071	-.133	-.008	.052	-.017	-.046	.073	.023	-.023	.125	-.094	
13.ADVMATH	-.007	.176	-.054	-.045	.037	-.016	.079	.107	-.073	.172	-.009	.032
14.WELLBE	.029	.106	-.051	-.019	-.021	.003	.062	-.071	-.001	.082	.002	-.020
15.LSTYLE	.030	.036	.023	-.033	.002	-.025	.019	-.021	-.014	.049	-.010	-.002
16.AVG	.073	.074	-.039	-.015	-.014	-.050	.116	-.099	-.111	.228	-.029	.093
17.HSGRD	.064	.039	-.030	.008	-.008	.010	.058	-.045	-.041	.173	-.027	.119
18.VOCSELF	-.038	.026	-.040	-.029	.031	-.002	.003	-.071	-.089	.087	-.036	.030
19.SIGOTHS	.077	-.081	-.026	.008	.032	.003	-.039	.121	-.007	-.085	-.062	.051
20.BARRIERS	-.073	-.078	.018	.046	.040	-.014	-.108	.105	.084	-.311	.030	-.034
21.PART	.097	.099	.022	-.079	-.033	.006	.130	-.123	-.071	.286	.001	.113
MEAN	1.532	1.429	.125	.287	.169	.047	-.008	2.842	-.002	.002	-.928	.000
SD	.499	.495	.330	.453	.375	.212	.991	2.136	.947	.994	.218	1.000

Codes: Gender=male/female; R-U=rural/urban; Reg 2-5=region; Plans=career plans; Famsize=family size; Attach=attachment; Valued=value of education; Guidance=guidance; Careinfo=career information; Advmath=advanced mathematics; Wellbe=well-being; Lstyle=learning style; Avg=academic achievement; Hsgrd=high school graduation; Vocself=vocational self-concept; Sigoths=significant others; Barriers=barriers; Part=participation

Table 5.3 (Cont'd)

Correlations, Means, and Standard Deviations of Variables Used in the Regression Model (Integrated)

	13.	14.	15.	16.	17.	18.	19.	20.	21.
1.GENDER									
2.R_U									
3.REG 2									
4.REG 3									
5.REG 4									
6.REG 5									
7.PLANS									
8.FAMSIZE									
9.ATTACH									
10.VALUED									
11.GUIDANCE									
12.CAREINFO									
13.ADVMATH									
14.WELLBE	.149								
15.LSTYLE	.032	.010							
16.AVG	.374	.145	.062						
17.HSGRD	.118	.065	.018	.290					
18.VOCSELF	.127	.081	.032	.152	.063				
19.SIGOTHS	-.020	-.075	-.011	.019	.005	-.012			
20.BARRIERS	-.168	-.077	-.094	-.213	-.110	-.087	.042		
21.PART	.226	.153	.065	.326	.211	.093	-.008	-.295	
MEAN	.179	.007	2.285	64.580	1.934	-.002	-.948	-.010	.679
SD	.384	.962	.965	13.415	.246	.998	.624	.960	.467

Codes: Gender = male/female; R-U = rural/urban; Reg 2-5 = region; Plans = career plans; Famsize = family size; Attach = attachment; Valued = value of education; Guidance = guidance; Careinfo = career information; Advmath = advanced mathematics; Wellbe = well-being; Lstyle = learning style; Avg = academic achievement; Hsgrd = high school graduation; Vocself = vocational self-concept; Sigoths = significant others; Barriers = barriers; Part = participation

postsecondary education. The direction of the association was as expected--the more that career planning was done, the more likely was the respondent to enter postsecondary education.

The correlation matrices showed that females from large families were less likely to go on to further education than were males from large families, albeit the difference was very slight. For example, between Family Size and Participation, r=-0.118 for males and r=-0.136 for females. The interpretation is that both males and females from large families were less likely to pursue higher education than their counterparts in smaller families, but where there was a difference in larger families, it favoured the male children. The degree of association, however, between Family Size and Participation was very low.

The resulting correlation coefficients for all three tables implied that further statistical treatment was warranted. For example, while the coefficients showed the degree of association and the direction of the relationships between the independent variables and the dependent variable, they offered limited information on the differences in the size of the effect between males and females. Secondly, the direction of some of the coefficients among the three groups was not anticipated, e.g., the negative or negligible relationships between Participation and the varables, Guidance, Region 4, and Significant Others. Further analysis might reveal whether these anomalies would remain if other variables in the equations that could confound them were partialled out.

Regression Analysis

Regression parameters were estimated for all specified relationships in the study. The order of the analysis was congruent with the linear paths hypothesized in the conceptual framework. Regression coefficients were first estimated to show how the exogenous variables affected each of the intervening variables. The questions to be answered related to the differences in the relative size of the effects of the exogenous variables on the intervening or endogenous variables, and to the unit change in the intervening variables caused by a unit change in the exogenous variables when other variables were "controlled." (See Chapter 3.) Metric coefficients were estimated separately for males and females. Regression parameters were then estimated in an extended model for both sexes in which the dependent variable was regressed on all the independent variables, both exogenous and endogenous. The final regression analysis was conducted on the extended total group model which incorporated the Gender variable.

A comparison of the intervening variable models for males and females showed both similar and dissimilar results. (See Tables 5.4 to 5.13.) Beginning with the male sample, the variables with the highest regression weights in the Academic Achievement equation were Advanced Mathematics and the Value of Education in the home. Both variables were statistically significant at the .01 level. This suggested that when other variables were held constant, e.g., Learning Style, Region, and Family Size, male respondents who came from a home that placed a high value on education and who took advanced mathematics in high school were more likely to have achieved well academically. The metric coefficient, or b, was 10.630 for Advanced Mathematics and 1.781 for Value of Education. This meant that for the Advanced Mathematics-Academic Achievement relationship, a unit change in Advanced Mathematics would account for 10.630 of a change in Academic Achievement when the effects of the other variables were held constant. By comparison, in the Value of Education-Academic Achievement relationship, a unit change in the Value of Education variable would account for 1.781 of a change in Academic Achievement, i.e., with the effects of the other variables partialled out.

These two variables, namely, Advanced Mathematics and Value of Education, were also found to be determinants of the Academic Attainment or high school graduation variable. Their b's were 0.059 and 0.041 respectively and statistically significant at the .01 level. The interpretation is similar as for the endogenous variable, Academic Achievement, discussed above. That is, a unit change in Advanced Mathematics would account for 0.059 of a change in Academic Attainment and a one unit change in Value of Education would account for 0.041 of a change in Academic Attainment.

Of equal statistical significance in terms of graduation was the variable, Career Information. The significance of this variable in a substantive way was that, with other variables held constant, the more information that young men received in high school about careers and occupations the more likely they were to attain high school graduation. The ways in which such information actually helped were not examined in this study--only the results were reported--but a speculative observation is that students with a sound knowledge base about careers and occupations were more likely to have formulated a definite career plan which could entail further education. Thus, they could be more highly motivated to graduate from high school than were those without such a plan or knowledge base.

The three highest regression coefficients pertaining to the vocational self-concept of the male respondents were obtained with the following variables: Advanced Mathematics, $b = 0.203$, Attachment, $b = -0.082$, and Family Size, i.e., size of family from which one came, $b = -0.034$. Having taken advanced mathematics was a positive influence on Vocational Self-concept but the other two variables had a negative effect. In other words, if a young man came from a large family and were closely attached to his home and community, he was less likely to think he could learn certain occupations easily and consequently he was less likely to have a high vocational self-concept.

In terms of the influence of significant others in the respondents' lives, the variables that had the highest levels of statistical significance for males (.01) were Family Size, Well-being, and the Value of Education in the family. Family Size was positively related to the influence of Significant Others. That is, young men who came from large families were more likely to consult with family members than with others in their lives about their career and educational plans than were

Table 5.4

Multiple Regression Parameters for the Intervening Variable, Avg.(Males)

Independent Variables	Avg.				
	b	Se b	Beta	t	
R_u	.398	.539	.014	0.739	
Reg 2	-.922	.836	-.022	-1.104	
Reg 3	.056	.641	.002	0.088	
Reg 4	-1.143	.736	-.032	-1.554	
Reg 5	-1.919	1.183	-.031	-1.622	
Plans	.836	.227	.068	3.685	**
Famsize	-.201	.124	-.030	-1.618	
Attach	-.805	.278	-.054	-2.895	*
Valued	1.781	.246	.139	7.250	**
Guidance	-1.595	1.211	-.024	-1.316	
Careinfo	.479	.252	.035	1.901	
Advmath	10.630	.669	.302	15.878	**
Wellbe	.889	.250	.065	3.552	**
Lstyle	.908	.255	.064	3.556	**

Multiple R = .4202 $p \leq .05$*
R^2 = .1766 $p \leq .01$**

Note: Avg. is the mnemonic for academic achievement.

Table 5.5

Multiple Regression Parameters for the Intervening Variable, Hsgrd (Males)

Independent Variables	Hsgrd				
	b	Se b	Beta	t	
R_u	.012	.011	.021	1.008	
Reg 2	-.013	.018	-.015	-0.702	
Reg 3	.011	.014	.018	0.780	
Reg 4	.013	.016	.018	0.861	
Reg 5	.047	.025	.037	1.843	
Plans	.003	.005	.012	0.593	
Famsize	-8.414	.003	-.006	-0.316	
Attach	-.009	.006	-.032	-1.604	
Valued	.041	.005	.161	7.890	**
Guidance	.016	.026	.012	0.617	
Careinfo	.023	.005	.085	4.279	**
Advmath	.059	.014	.083	4.109	**
Wellbe	.011	.005	.040	2.051	*
Lstyle	.010	.005	.037	1.843	

Multiple R = .2488 $p \leq .05$*
R^2 = .0619 $p \leq .01$**

Note: Hsgrd is the mnemonic for high school graduation.

Table 5.6

Multiple Regression Parameters for the Intervening Variable, Vocself (Males)

	Vocself				
Independent Variables	b	Se b	Beta	t	
R_u	-.084	.043	-.041	-1.951	*
Reg 2	-.076	.067	-.024	-1.129	
Reg 3	-.104	.051	-.047	-2.024	*
Reg 4	.104	.059	.039	1.763	
Reg 5	.013	.095	.003	0.143	
Plans	-.043	.018	-.047	-2.361	*
Famsize	-.034	.010	-.068	-3.401	**
Attach	-.082	.022	-.074	-3.687	**
Valued	.055	.020	.058	2.790	*
Guidance	-.048	.097	-.010	-0.492	
Careinfo	.042	.020	.042	2.078	*
Advmath	.203	.054	.078	3.786	**
Wellbe	.051	.020	.051	2.573	*
Lstyle	.033	.020	.032	1.624	

Multiple $R = .1988$ $p \leq .05$*
$R^2 = .0395$ $p \leq .01$**

Note: Vocself is the mnemonic for vocational self-concept.

Table 5.7

Multiple Regression Parameters for the Intervening Variable, Sigoths (Males)

Independent Variables	Sigoths				
	b	Se b	Beta	t	Sig t
R_u	-.071	.027	-.055	-2.622	*
Reg 2	-.087	.042	-.045	-2.086	*
Reg 3	-.042	.032	-.030	-1.312	
Reg 4	.070	.037	.042	1.910	
Reg 5	.174	.059	.060	2.941	*
Plans	-.033	.011	-.058	-2.936	*
Famsize	.032	.006	.104	5.229	**
Attach	.009	.014	.012	0.619	
Valued	-.042	.012	-.071	-3.429	**
Guidance	-.142	.060	-.047	-2.339	*
Careinfo	.017	.013	.027	1.350	
Advmath	.010	.033	.006	0.311	
Wellbe	-.048	.012	-.076	-3.860	**
Lstyle	-.003	.013	-.004	-0.222	

Multiple $R = .2110$ $p \leq .05$*
$R^2 = .0445$ $p \leq .01$**

Note: Sigoths is the mnemonic for significant others.

Table 5.8

Multiple Regression Parameters for the Intervening Variable, Barriers (Males)

Independent Variables	Barriers				
	b	Se b	Beta	t	
R_u	-.154	.041	-.077	-3.791	**
Reg 2	-.095	.063	-.031	-1.509	
Reg 3	-.005	.048	-.002	-0.113	
Reg 4	.073	.055	.028	1.320	
Reg 5	.085	.089	.019	0.952	
Plans	-.023	.017	-.025	-1.327	
Famsize	.022	.009	.044	2.345	*
Attach	.059	.021	.054	2.832	*
Valued	-.246	.018	-.261	-13.267	**
Guidance	-.027	.091	-.006	-0.301	
Careinfo	-.011	.019	-.011	-0.593	
Advmath	-.277	.050	-.107	-5.482	**
Wellbe	-.019	.019	-.018	-0.998	
Lstyle	-.072	.019	-.070	-3.745	**

Multiple $R = .3569$ $p \leq .05$*
$R^2 = .1274$ $p \leq .01$**

young men who came from smaller families. The variables, Well-being and Value of Education, were negatively associated with the variable, Significant Others. That is, the lower the individual sense of well-being, and the less that education was valued in the home, the more likely were young men in the sample to turn to friends and others rather than their own family on decisions about their career choices.

Four exogenous variables were shown to have a statistically significant effect on the endogenous variable, Barriers. The variables were Advanced Mathematics, Value of Education, Learning Style, and Rural/Urban. All four were negatively related to Barriers. A negative relationship in this case meant that the respective variables mitigated the barriers' effect on participation. In other words, urban students who took advanced mathematics and who preferred independent study and who were from homes that valued education would not perceive the barriers to entry into postsecondary education as particularly severe.

The same intervening or endogenous variables were examined in the reduced female sample. That is, each of the endogenous variables was regressed in turn on all the exogenous variables and the respective parameters were estimated. Beginning with the variable, Academic Achievement, there were seven exogenous variables that were shown to have regression parameters statistically significant at the .01 level. (See Tables 5.9 to 5.13.) This contrasted with the two variables for males that had coefficients at this level of statistical significance. Two of the seven variables for females were the same as the two for males, namely, Advanced Mathematics in high school and the Value of Education. The regression coefficients were in a positive direction in both cases. In other words, males and females who took advanced mathematics in high school, and who came from homes that valued education were more likely to have a higher average in grade 12 than were respondents who did not take advanced mathematics and whose families did not seem to value education highly.

Other variables in the female model for Academic Achievement with regression coefficients that were statistically significant included Career Information, Regions 2, 3, 4 and 5, Family Size, Attachment, and Well-being. Regions 2, 3, 4 and 5, Family Size, and Attachment had negative signs. That is, their metric and beta coefficients were negatively associated with the dependent variable, Academic Achievement. What this meant was that female respondents who came from a large family and who had a close attachment to their family and home community were less likely than others to have high marks in grade 12. Also, respondents who lived in region 2, 3, 4 or 5 were less likely to have as high a grade 12 average as were students from region 1, the Avalon Peninsula, the region against which the other four regions were compared. Other variables in the female model for Academic Achievement that were statistically significant showed that females who had access to career information and who continued to have a high level of general well-being were also likely to have a high average in grade 12 public examinations.

The second endogenous variable in the reduced female model to be regressed on the exogenous variables was Academic Attainment, operationalized as high school graduation. The same three exogenous variables as were shown in the male reduced model to influence graduation also had regression parameters in the female model that were statistically significant at the .01 level. The variables were Career Information, Value of Education, and Advanced Mathematics. In each sample, consequently, these three variables were the most powerful determinants of high school graduation, in terms of the magnitude of their respective metric weights.

For the Vocational Self-concept variable in the reduced female model (see Table 5.11), the variables with statistically significant regression parameters were generally different from those in the corresponding male model. (See Table 5.6.) The variables, Advanced Mathematics, Well-being, Value of Education and Attachment were shown to be commonly related to Vocational Self-concept in both samples. For females, the variables, Guidance and Regions 1 and 2, were found to be negatively related to Vocational Self-concept, as was Attachment. The latter variable also had a negative sign in the corresponding male model.

For the intervening variable, Significant Others, in the female sample, the effect of the exogenous variable, Family Size, was comparable to that found in the corresponding male model. The b for Family Size in the female model was 0.024 compared to 0.032 in the male model. This meant that a unit change in

Table 5.9

Multiple Regression Parameters for the Intervening Variable, Avg.(Females)

Independent Variables	Avg.				
	b	Se b	Beta	t	
R_u	-.027	.487	-.001	-0.056	
Reg 2	-2.113	.734	-.053	-2.879	*
Reg 3	-1.457	.581	-.049	-2.505	*
Reg 4	-2.259	.655	-.064	-3.448	**
Reg 5	5.204	1.104	-.082	-4.718	**
Plans	.393	.255	.026	1.542	
Famsize	-.240	.101	-.041	-2.372	*
Attach	-1.464	.231	-.109	-6.325	**
Valued	1.743	.248	.122	7.014	**
Guidance	.658	.995	.011	0.661	
Careinfo	1.066	.225	.080	4.735	**
Advmath	11.712	.596	.338	19.639	**
Wellbe	1.201	.241	.084	4.990	**
Lstyle	.222	.227	.016	0.979	

Multiple $R = .4620$ $p \leq .05$*
$R^2 = .2135$ $p \leq .01$**

Table 5.10

Multiple Regression Parameters for the Intervening Variable, Hsgrd (Females)

Independent Variables	Hsgrd				
	b	Se b	Beta	t	Sig t
R_u	.016	.009	.035	1.760	
Reg 2	-.009	.013	-.014	-0.684	
Reg 3	.011	.011	.023	1.068	
Reg 4	-.017	.012	-.029	-1.397	
Reg 5	-.015	.020	-.015	-0.770	
Plans	.005	.005	.019	1.045	
Famsize	-.002	.002	-.021	-1.106	
Attach	-.004	.004	-.017	-0.914	
Valued	.023	.004	.098	5.099	**
Guidance	-.018	.018	-.019	-1.017	
Careinfo	.023	.004	.107	5.730	**
Advmath	.041	.011	.071	3.744	**
Wellbe	.009	.004	.039	2.078	*
Lstyle	-.005	.004	-.022	-1.221	

Multiple $R = .2079$ $p \leq .05$*

$R^2 = .0432$ $p \leq .01$**

Table 5.11

Multiple Regression Parameters for the Intervening Variable, Vocself (Females)

Independent Variables	Vocself				
	b	Se b	Beta	t	
R_u	.030	.040	.015	0.751	
Reg 2	-.177	.060	-.060	-2.924	*
Reg 3	-.078	.048	-.036	-1.639	
Reg 4	-.069	.054	-.026	-1.282	
Reg 5	-.156	.091	-.033	-1.715	
Plans	-.002	.021	-.002	-0.108	
Famsize	-.010	.008	-.022	-1.175	
Attach	-.078	.019	-.078	-4.088	**
Valued	.050	.020	.047	2.477	*
Guidance	-.222	.082	-.051	-2.707	*
Careinfo	.001	.018	.001	0.082	
Advmath	.287	.049	.111	5.836	**
Wellbe	.072	.020	.068	3.659	**
Lstyle	.017	.019	.017	0.926	

Multiple $R = .2077$ $p \leq .05$*
$R^2 = .0431$ $p \leq .01$**

Table 5.12

Multiple Regression Parameters for the Intervening Variable, Sigoths (Females)

Independent Variables	Sigoths				
	b	Se b	Beta	t	
R_u	-.086	.025	-.069	-3.421	**
Reg 2	-.086	.038	-.046	-2.271	*
Reg 3	-.040	.030	-.029	-1.340	
Reg 4	-.019	.034	-.011	-0.560	
Reg 5	-.126	.057	-.043	-2.229	*
Plans	.002	.013	.003	0.162	
Famsize	.024	.005	.089	4.700	**
Attach	-.016	.012	-.026	-1.371	
Valued	-.056	.013	-.085	-4.417	**
Guidance	-.170	.051	-.062	-3.317	**
Careinfo	.031	.012	.050	2.645	*
Advmath	.047	.031	.029	1.531	
Wellbe	-.030	.012	-.045	-2.413	*
Lstyle	-.002	.018	-.004	-0.211	

Multiple $R = .1919$ $p \leq .05$*
$R^2 = .0368$ $p \leq .01$**

Table 5.13

Multiple Regression Parameters for the Intervening Variable, Barriers (Females)

Independent Variables	Barriers				
	b	Se b	Beta	t	
R_u	.015	.036	.008	0.413	
Reg 2	-.001	.054	-.004	-0.024	
Reg 3	.103	.043	.050	2.415	*
Reg 4	.167	.048	.068	3.479	**
Reg 5	-.105	.081	-.024	-1.298	
Plans	-.067	.019	-.064	-3.599	**
Famsize	.017	.007	.042	2.328	*
Attach	.057	.017	.061	3.369	**
Valued	-.259	.018	-.260	-14.197	**
Guidance	.094	.073	.023	1.291	
Careinfo	.015	.016	.016	0.924	
Advmath	-.230	.044	-.095	-5.248	**
Wellbe	-.038	.018	-.038	-2.146	*
Lstyle	-.067	.017	-.070	-4.028	**

Multiple $R = .3633$ $p \leq .05$*

$R^2 = .1320$ $p \leq .01$**

Family Size for females accounted for 0.024 of a change in the extent to which they discussed their career plans with their parents. It was shown earlier that for males, a unit change in Family Size would account for 0.032 of a change in the extent to which they discussed their career plans with their parents rather than with others. Both coefficients were shown to be statistically significant at the .01 level. The interpretation is similar for females and males. That is, females from large families were more likely to consult with their family than with others about their career plans than were females from small families. Other variables that were shown to have statistically significant coefficients in the Significant Others equation were the central region of the province and Labrador, i.e., Regions 2 and 5, as well as the variables, Well-being, Guidance, Career Information, Value of Education, and Rural/Urban.

In the reduced female model, exogenous variables which mitigated the effects of barriers to postsecondary participation were Learning Style, Career Plans, Well-being, Advanced Mathematics in high school, and Value of Education. All five variables were negatively associated with the intervening variable. The latter two variables, namely, Advanced Mathematics and the Value of Education, had earlier been shown to be statistically significant in the male sample as detractors in the Barriers equation. That is, the variables were shown to have a negative relationship with the endogenous variable, Barriers.

The interpretation of the negative coefficient is that the effects of perceived barriers to participation were reduced for young women if they had taken advanced mathematics in high school, if their preferred method of learning was independent study, if they had formulated a career plan, if they continued to possess a general sense of well-being, and if they came from a home that placed a high value on education. In other words, females who experienced one of these five phenomena (the others were held constant through regression) were less likely than females who did not experience the particular phenomenon to be prevented from attending postsecondary education because of perceived barriers to their participation. Individually, the more an independent learning style was preferred, the less was coping with academics in postsecondary education viewed as a problem. The presence of a career plan and a general sense of well-being helped the young women to be psychologically prepared for coping with the demands of postsecondary education. Females who had taken advanced mathematics in grade 12 were less likely to consider mathematics a potential problem in postsecondary education. And, if education was highly valued in the family, the more was the likelihood that young women would attend postsecondary schooling.

Similarities between males and females in the effects of some exogenous variables on the respective endogenous variables were apparent when specific metric coefficients for variables that were not statistically significant in one or both models were compared. For example, Learning Style as a determinant of Academic Achievement was substantially higher, statistically, in the male sample than in the female sample. Compare b=0.908 for males with b=0.222 for females. To continue the pattern of interpretation of metric coefficients generally, a one unit change in Learning Style for males would account for 0.908 of a change in Academic Achievement whereas a one unit change in Learning Style for females would account for 0.222 of a change in Academic Achievement. That is, the magnitude of the effect of Learning Style on high school average for males was four times greater than the effect of Learning Style on female high school average, taking into account that all other variables in the two equations had been held constant. For females, this particular variable, unlike for males, was shown not to be statistically significant as a determinant of Academic Achievement.

Another example pertained to the effect of rurality on Academic Achievement. In the male model, the b for Rural/Urban was 0.398 and in the female model, the b was -0.027. The size of the effect of the Rural/Urban variable for males on Academic Achievement was nearly 15 times greater, statistically, than its effects on female academic achievement. The bigger effect for males meant that a unit change in the Rural/Urban variable for males accounted for 0.398 of a change in Academic Achievement whereas a unit change in Rural/Urban for females, by comparison, accounted for virtually no change in Academic Achievement. In essence, no change in Academic Achievement status for females occurred because of rurality. For urban males, approximately one-third of an increase in Academic Achievement resulted because they lived in an urban area. In neither model was the effect of the

Rural/Urban variable on Academic Achievement statistically significant even though the size of the metric coefficient was so much greater for males than females.

Three distinct differences between the results for males and females appeared in the Vocational Self-concept regression equation. Neither the Guidance nor the Region 2 variable was statistically significant in the male model. Their metric coefficients were -0.048 and -0.076 respectively. Both variables were statistically significant at the .05 level in the female model with metric estimates of -0.222 for the Guidance variable and -0.177 for the Region 2 variable. The differences meant that the size of the effects of Guidance were nearly five times greater on the Vocational Self-concept of females than on males and the effects of Region 2 on Vocational Self-concept were twice as great among females as among males. The interpretation of the latter relationship is that when controlling for all the other variables in the respective equations, the negative effects on Vocational Self-concept of living on the south coast of the province were twice as great, statistically, for females as for males.

The Barriers composite also showed three distinct differences between the samples when it was regressed on the exogenous variables. Region 4 had a metric coefficient of 0.167 in the female sample and was statistically significant at the .01 level. It was not statistically significant in the male model. Its metric coefficient of 0.073 was more than twice as low in its effects as a barrier to participation than it was for females. The effects of the variable, Region 3, on

Barriers were similar in both models, i.e., statistically significant at the .05 level in the female model with a coefficient of 0.103 and not statistically significant in the male model with a coefficient of -0.005. This meant that, statistically, the size of the effects of Region 3 as a barrier were 20 times greater for females than for males. The difference between the two parameters was meaningful in that the sign was negative in the male sample which indicated that coming from Region 3 was a barrier to postsecondary participation for females but not for males.

The third difference pertained to the Rural/Urban variable. The metric coefficient between this variable and Barriers was 0.015 in the female sample and was not statistically significant. The relevant coefficient was -0.154 in the male model which was statistically significant at the .01 level. The difference in the two coefficients shows that the magnitude of the effects of rurality on Barriers was 11 times greater, statistically, for males than for females when the other variables were held constant. The negative coefficient for males suggested that male respondents from rural areas in the province perceived the barriers to postsecondary participation to be greater than did male respondents from urban areas in the province.

In general, the regression analyses for the reduced models in the male and female samples gave an indication of the shifts that had to occur in the exogenous variables in order to produce a change in the respective endogenous variables. For example, exogenous variables that were statistically significant at the .01 level for four of the five endogenous variables were Advanced

Mathematics and Value of Education. The first of these had the highest metric and beta coefficients in the four models for both males and females. In the Academic Achievement equation, Advanced Mathematics had much the same effect for both sexes. That is, a unit change in Advanced Mathematics would account for 10.630 of a change in Academic Achievement for males and 11.712 of a change for females. The comparability was equivalent for the variables Academic Attainment, Vocational Self-concept, and Barriers.

The size of the effect of Advanced Mathematics on those three intervening variables was about the same for each variable and for each sample. The shift that was required, however, in Advanced Mathematics to produce a substantial change in the three endogenous variables in both samples was much smaller than in the Academic Achievement variable. For example, a unit change in Advanced Mathematics would account for 0.059 of a change in Academic Attainment for males and 0.041 of a change for females, and 0.203 of a change in Vocational Self-concept for males and 0.287 of a change for females. The size of the effect on Barriers was also comparable. A unit change in Advanced Mathematics for males would account for 0.277 of a change in Barriers, and for females, a unit change in Advanced Mathematics would account for 0.230 of a change in Barriers.

The size of the effect of the Value of Education variable on all five of the endogenous variables was generally equivalent for males and females. Its effect, however, was greatest on the Academic Achievement variable in that a unit change in Value of Education would account for 1.781 and 1.743 of a change in Academic Achievement respectively for males and females.

By comparison, the coefficients between the Value of Education variable and the other four endogenous variables were smaller than with Academic Achievement. The size of the b between Value of Education and Academic Attainment was nearly twice as great for males as it was for females--0.041 compared to 0.023. With the remaining three endogenous variables, the respective b's for males and females between Value of Education and Vocational Self-concept were 0.055 and 0.050; between Value of Education and Significant Others, -0.042 and -0.056; and between Value of Education and Barriers, -0.246 and -0.259. A unit change in Value of Education would produce a comparable change in each of the respective endogenous variables for both samples. In other words, a unit shift in Value of Education would account for a similar size change in Vocational Self-concept, Significant Others, and Barriers in both the male and female models.

Other exogenous variables in both samples were comparably smaller in the size of their effects on the endogenous variables. Generally, a unit change in those exogenous variables that were statistically significant would account for a very small change in the endogenous variables. While the effects differed substantially in statistical terms among some exogenous variables in each sample, the size of the effects in substantive terms, i.e., to produce a meaningful change, was very small.

Extended Model (Males)

The regression coefficients for the extended model for males are shown in Table 5.14. The extended model incorporated all the exogenous (source) variables and all the endogenous (intervening) variables. The dependent variable, Postsecondary Participation, was regressed on all 19 of the independent variables. Ten of the coefficients were statistically significant at .05, but only two variables had metric coefficients that were 0.100 or higher. They were Academic Attainment and Advanced Mathematics with b's respectively of 0.130 and 0.107. A third variable that was comparable in size was Barriers with a b of -0.089. The interpretation of these coefficients suggests that whereas Academic Attainment and Advanced Mathematics were statistically significant, their effects added together accounted for slightly less than one-quarter of a shift from non-participation status to participation status for males. Neither of the variables would effect more than one-eighth of a change on Participation. Expressed another way, the effects of Academic Attainment or high school graduation alone would have to increase eight times for a change in participation status to occur, and the effects of Advanced Mathematics alone would have to increase 10 times for a change to occur.

The relationship for Barriers was negative. This meant that the more barriers young men perceived to be present to prevent them from continuing their education, the less likely they were to enroll in a postsecondary education program following high school graduation. However, the size of the effect of the

Table 5.14

Multiple Regression Parameterss for Postsecondary Participation (Males)

Independent Variables	Participation				
	b	Se b	Beta	t	
R_u	.020	.019	.020	1.055	
Reg 2	.046	.029	.031	1.598	
Reg 3	-.057	.022	-.054	-2.571	*
Reg 4	-.056	.026	-.044	-2.206	*
Reg 5	-.006	.041	-.003	-0.143	
Plans	.013	.008	.031	1.702	
Famsize	-.010	.004	-.024	-2.420	*
Attach	-.017	.010	-.032	-1.748	
Valued	.059	.009	.129	6.559	**
Guidance	.051	.042	.023	1.211	
Careinfo	.029	.009	.060	3.310	**
Advmath	.107	.024	.085	4.364	**
Wellbe	.032	.009	.067	3.700	**
Lstyle	.014	.009	.028	1.604	
Avg.	.006	.004	.163	8.094	**
Hsgrd	.130	.033	.074	3.923	**
Vocself	.005	.009	.010	0.540	
Sigoths	.015	.014	.020	1.101	
Barriers	-.089	.009	-.183	-9.634	**

Multiple $R = .4638$ $p \leq .05$*
$R^2 = .2151$ $p \leq .01$**

Barriers variable would have to increase by 11 times for it to result in a change of status from non-participation to participation, other things being equal, i.e., the other variables in the equation being held constant.

An analysis of the standardized regression weights, or ß's, in this model showed that the variables, Barriers, Academic Achievement, and Value of Education had coefficients above the 0.100 level. The interpretation of the ß's takes into account that the size of one ß is relative to the size of the other ß's in the equation, and that the effects of the other ß's are held constant in relation to the one under consideration. The interpretation of the Barriers variable is that a one standard deviation change in Barriers would account for 0.183 of a standard deviation change in Participation; in other words, about one-fifth of a standard deviation shift from non-participation status to participation. The standard deviation of Participation for males was 0.48 which meant that slightly more than 2 standard deviation shifts would be needed to move from non-participation status to participation. In non-technical terms, this meant that relative to the other variables, the size of the effects of Barriers would have to decrease about 11 times, as stated above, for a positive change to occur in status from non-participation to participation.

The effects of Academic Achievement and Value of Education on the Participation variable were 0.163 and 0.129 respectively. This meant that relative to the other variables in the equation, a 1.00 standard deviation change in Academic Achievement would account for 0.167 of a standard deviation change in Participation, and a 1.00 standard deviation change in Value of Education, 0.129 of a standard deviation change in Participation. In other words, the size of the effects of Academic Achievement would need to increase 12 times and the size of the effects of Value of Education 16 times to bring about a change in status from non-participation to participation.

Extended Model (Females)

As with the extended model for males, the dependent variable, Participation, was regressed on all 19 independent variables in the female extended model. Table 5.15 shows the regression coefficients. Eleven variables were identified as statistically significant determinants of Postsecondary Participation. Nine of these were the same variables as in the male model; namely, Barriers, Career Information, Family Size, Well-being, Academic Attainment, Advanced Mathematics, Value of Education, Region 3 and Academic Achievement. The relationship was positive for all but three variables, namely, Barriers, Region 3 and Family Size. Academic Attainment was the only variable that had a metric coefficient above 0.100--its b was 0.225. The b's of the other independent variables were at the 0.070 level or less. This meant that with all the other variables partialled out, Academic Attainment accounted for one-fifth of a change in status from non-participation in postsecondary education to participation and that the effects of the other variables that were statistically significant separately exerted less than one-twelfth of a change on Participation. Collectively, the effects of all the statistically significant variables, including

Table 5.15

Multiple Regression Parameters for Postsecondary Participation (Females)

Independent Variables	Participation				
	b	Se b	Beta	t	
R_u	.045	.016	.050	2.760	
Reg 2	.035	.025	.026	1.409	
Reg 3	-.042	.020	-.042	-2.148	
Reg 4	-.022	.022	-.018	-0.986	
Reg 5	.030	.037	.014	0.815	
Plans	.031	.009	.062	3.658	**
Famsize	-.010	.003	-.049	-2.879	*
Attach	-.005	.008	-.011	-0.646	
Valued	.061	.009	.127	6.996	**
Guidance	.047	.034	.023	1.388	
Careinfo	.031	.008	.069	4.078	**
Advmath	.070	.021	.060	3.267	*
Wellbe	.045	.008	.093	5.466	**
Lstyle	.007	.008	.015	0.934	
Avg.	.006	.004	.177	9.163	**
Hsgrd	.225	.035	.109	6.303	**
Vocself	.008	.008	.019	1.114	
Sigoths	.016	.012	.022	1.294	
Barriers	-.070	.009	-.145	-8.173	**

Multiple $R = .4716$ $p \leq .05$*

$R^2 = .2233$ $p \leq .01$**

Academic Attainment, that were positively related to Participation exerted a change of one-half in the status of respondents from non-participants to participants. A unit change in all of them added together would account for 0.508 of a change in participation.

An analysis of the beta coefficients, or ß's, in the model showed that four variables, namely, Academic Achievement, Barriers, Value of Education, and Academic Attainment, had ß's of 0.100 or above. The variable, Academic Achievement, ß=0.177, exerted the biggest influence on Participation relative to the beta weights of the other three variables which were -0.145 for Barriers; 0.127 for Value of Education; and 0.109 for Academic Attainment. The interpretation of the ß for Academic Achievement is that when the effects of all the other variables in the equation were held constant, a 1.00 standard deviation change in Academic Achievement accounted for 0.177, or nearly one-fifth, of a standard deviation change in Participation. The combined relative effects of Value of Education and Academic Attainment exerted one-quarter of a standard deviation change in Participation when all the other variables were held constant. The direction of the Barriers variable was negative, indicating that its effects detracted females from participating in postsecondary education. The beta weight, -0.145, can be interpreted to mean that the impact of the Barriers variable would have to be reduced 12 times for a positive change to occur in Participation for females, i.e., a shift from non-participation status to participation.

A comparison of the metric coefficients for the independent variables in the two extended models, male and female, showed that the similarities were greater than the differences. Of the ten variables in the male model that were statistically significant with Participation, nine of them were also statistically significant in the female model. The size of the b's were comparable in both models which meant that generally the same amount of change would have to occur in the independent variables for a positive change to occur in Participation.

An exception to the comparability of the b's in the statistically significant variables common to both extended models was Academic Attainment. A unit change in this variable for males would account for 0.130 of a change in Participation. For females, a unit change in Academic Attainment would account for 0.225 or nearly twice the change in Participation as for males. That is, the effect of Academic Attainment on Participation for females was almost twice as great as for males. Where a unit change in Academic Attainment would move females one-quarter closer to a change in status from non-participant to participant, the same unit change would move males only one-eighth of the way closer.

The three differences between variables that appeared in the two models pertained to geography and career planning. In the male model, young men from the central and western parts of the province, Regions 3 and 4 respectively, were less likely to continue their education than were young men from Region 1, the Avalon Peninsula. In the female model, the finding applied to Region 3 but not to Region 4. The b for Region 4 for females was -0.022 and not statistically significant. This meant that young women in western Newfoundland were just as likely to go on to college or university as were young women from Region 1.

The difference in the size of the b for Region 4 in the two models indicates that the effects were more pertinent to males. In the male model, the b for Region 4 was -0.056 and statistically significant at the .05 level. This meant that the effects of Region 4 on Participation for males was 2.5 times greater than the effects of Region 4 on Participation for females, after all other variables in the equation had been partialled out, i.e., held constant.

Conversely, the size of the effects of the Rural/Urban and Career Planning variables on Participation for females were twice as great, numerically, as on Participation for males. The b for Rural/Urban in the male model was 0.020 and not statistically significant. In the female model, the b was 0.045 and statistically significant at the .05 level. While the coefficients in both models were very low, a change in status from non-participant to participant for males would require twice the change in the size of the effect of the Rural/Urban variable as it would to change females from non-participants to participants. Comparisons between these two coefficients, however, only have meaning in numerical terms. Metric coefficients are not relative weights. The size of the effect of an independent variable on Participation for females, for example, in metric terms does not equate with the size of the effect of the same independent variable for males. Such comparisons can only apply for standardized regression coefficients. Thus, the comparisons made here are numerical comparisons rather than effects comparisons.

The interpretation of the variable, Career Plans, is similar. The b for Career Plans in the female model was 0.031 and statistically significant at the .01 level compared to .013 in the male model and not statistically significant. The magnitude of change in the effects of the Career Plans variable for males would be more than twice that for females in order to produce a positive change in Participation. Bearing this caveat in mind, the interpretation of the findings is that the more that females had a career plan, the more likely they were to participate in postsecondary education, and if they were from an urban area, they were more likely to participate than were females from a rural area.

The Extended Integrated Model

This total group model gave the regression parameters respectively for all the independent variables in the theoretical framework. Coefficients are shown in Table 5.16. The dependent variable, Participation, was regressed on all the exogenous plus all the endogenous variables, including Gender. Regression parameters for the endogenous variables regressed on the exogenous variables are given in Tables 5.1a to 5.5a, Appendix J, but the parameters were not analyzed because the findings were not substantially different than those reported in the male and female models. Further, the thrust of the study was to examine the effects of the independent variables, exogenous and endogenous, on the criterion variable, Participation.

Table 5.16

Multiple Regression Parameters for Postsecondary Participation (Integrated Model)

Independent Variables	Participation				
	b	Se b	Beta	t	
Gender	.045	.011	.048	3.960	**
R_u	.036	.012	.037	2.794	*
Reg 2	.040	.019	.028	2.109	*
Reg 3	-.048	.015	-.047	-3.255	*
Reg 4	-.039	.017	-.031	-2.326	*
Reg 5	.009	.028	.004	0.337	
Plans	.021	.006	.044	3.620	**
Famsize	-.010	.003	-.047	-3.828	**
Attach	-.011	.006	-.022	-1.734	
Valued	.060	.006	.128	9.634	**
Guidance	.061	.026	.028	2.318	*
Careinfo	.031	.006	.067	5.407	**
Advmath	.087	.016	.071	5.362	**
Wellbe	.038	.006	.079	6.427	**
Lstyle	.010	.006	.021	1.720	
Avg.	.006	.004	.169	12.220	**
Hsgrd	.170	.024	.090	7.073	**
Vocself	.007	.006	.015	1.262	
Sigoths	.016	.009	.021	1.701	
Barriers	-.080	.006	-.165	-12.778	**

Multiple $R = .4739$ $p \leq .05$*
$R^2 = .2246$ $p \leq .01$**

All the determinants of Postsecondary Participation that were found to be statistically significant in either or both the male and female extended models were shown to also be statistically significant in the extended integrated model. (See Table 5.17 for the comparisons.) A general comment on the variables that were common in all three extended models was that the size of the beta coefficients were either the same or in the mid-range of those in the male and female samples. Also, the directions of the relationships were the same.

The three main variables in the full model that were most highly related to Participation were Academic Achievement, Barriers, and Value of Education. In each case, the β was above 0.100 and statistically significant at the .01 level. The variable, Academic Achievement, had the highest β at 0.170 followed by the variables, Barriers, at -0.165 and Value of Education at 0.128. Relative to the other variables in the model and taking into account that the effects of all the other variables were held constant, Academic Achievement had the greatest effects on Postsecondary Participation. In substantive terms, the effects were small. A 1.00 standard deviation change in Academic Achievement would account for 0.170 of a standard deviation change in Participation, or in other words, approximately one-fifth of a standard deviation shift from non-participation status to participation.

The Barriers variable was negatively associated with Participation and had the second highest β in the regression equation at -0.165. The magnitude of the relationship was about the same as the Academic Achievement-Participation relationship except that the direction was reversed. The interpretation is that the effects of the Barriers variable would be reduced by about one-tenth on a non-participation/participation continuum. (The standard deviation for Participation in the descriptive statistics was 0.47--See Table AH. 3, Appendix H--necessitating a doubling of the size of the beta coefficient to arrive at the degree of movement required to shift from non-participation to participation status.) The size of the ß implied that a 1.00 standard deviation change in Barriers would account for 0.165 of a standard deviation change in Participation. The negative relationship indicated that the greater the perceived barriers, the less was the likelihood that the respondents in the study would participate in higher education.

The direction of the Value of Education variable was positive. The ß was 0.128 which indicated that, other things being equal, i.e., the other variables held constant, a 1.00 standard deviation change in Value of Education would account for one-eighth of a standard deviation change in Participation. The size of the coefficient meant that the value held for education in the home would have to increase nearly 16 times for a positive shift to occur between non-participation and participation. This is because the standard deviation for Participation was 0.48. So, for the Value of Education variable, a change in status from non-participation to participation would require a move of about two standard deviations along the continuum, as previously mentioned.

Three other variables in the integrated or full model that were statistically significant at the .01 level had beta weights that were relatively comparable to one another. Academic Attainment, Well-being, and Advanced Mathematics had ß's of 0.90, 0.079, and 0.071 respectively. The variable, Academic Attainment or high school graduation, had the highest metric coefficient of any variable in the equation including the three variables of Academic Achievement, Barriers, and Value of Education that were identified above as having had the highest consecutive beta coefficients. This means that a unit change in Academic Attainment would account for one-sixth of a unit change in Participation in the full model when all the other variables were held constant. The interpretation of the ß's in descending order for the variables is that a standard deviation change in Academic Attainment, relative to the other variables, would account for one-eleventh of a standard deviation shift towards Participation and that using measures of 0.079 and 0.071, the effects of Well-being and Advanced Mathematics would account for approximately one-twelfth of a standard deviation change in Participation. In substantive terms, these coefficients were very small shifts along a non-participation/participation continuum. By comparison, and in relative terms, the Academic Achievement-Participation relationship was approximately twice as strong as either the relationship between Well-being and Participation or between Advanced Mathematics and Participation, i.e., 0.170 is 2.4 times and 2.2 times bigger respectively than 0.071 and 0.079.

The Gender variable was shown not to be strongly related to Participation. While it was statistically significant at the .01 level in the full model, the beta weight of 0.048 showed that there was 1/20 difference in real terms between males and females in their tendency to enrol in postsecondary education. The measures used for this variable were males=1, females=2. The positive ß showed that the effects of the variable favoured females, but that the difference was so small that males or females would equally be likely to attend postsecondary education.

In summary, both the correlational and regression analyses revealed that six of the 17 independent variables were consistently most highly related to Postsecondary Participation. In descending order, they were Academic Achievement, Barriers, Value of Education, Advanced Mathematics, Academic Attainment and Well-being. Their correlation coefficients were comparable in all three matrices. For the total group model the correlations were 0.33, -0.30, 0.29, 0.23, 0.21 and 0.15. The order of the effects of those variables were generally consistent in the male, female, and total group models. For example, Academic Achievement was first in order in the female and total group models and second in order in the male model. Barriers was second in order in the female and total group models and first in order in the male model. Value of Education was third in order in all three models, and so on. The relative size of the effects of each variable on Participation was generally comparable across the three models. Table 5.17 shows the respective ß's in the male, female, and the full model for Academic Achievement to be 0.163, 0.178, and 0.170. For the Barriers variable, the respective ß's were -0.183, -0.145, and -0.165. Similarly, the

Table 5.17

Comparisons of Regression Parameters for Participation

Independent Variables	Participation					
	Male Model		Female Model		Integrated Model	
	b	β	b	β	b	β
Gender	n/a		n/a		.045	.048
R_u	.020	.020	.046	.050	.035	.037
Reg 2	.046	.031	.035	.026	.040	.028
Reg 3	-.057	-.054	-.042	-.042	-.048	-.047
Reg 4	-.057	-.044	-.022	-.018	-.039	-.031
Reg 5	-.006	-.003	.031	.014	.009	.004
Plans	.013	.031	.032	.062	.021	.044
Famsize	-.011	-.044	-.010	-.049	-.010	-.047
Attach	-.017	-.032	-.005	-.011	-.011	-.022
Valued	.059	.129	.061	.127	.060	.128
Guidance	.051	.022	.047	.024	.061	.029
Careinfo	.029	.060	.031	.069	.031	.067
Advmath	.107	.086	.070	.060	.087	.071
Wellbe	.032	.067	.045	.093	.038	.079
Lstyle	.014	.029	.007	.016	.010	.021
Avg.	.006	.163	.006	.178	.006	.170
Hsgrd	.130	.074	.224	109	.170	.090
Vocself	.005	.010	.009	.019	.007	.016
Sigoths	.015	.020	.016	.022	.016	.021
Barriers	-.089	-.183	-.070	-.145	-.080	-.165

R^2 = .2152 (Male Model)
R^2 = .2233 (Female Model)
R^2 = .2246 (Integrated Model)

ß's for Value of Education were respectively 0.129, 0.127, and 0.128. The only variable that showed slight variation in the size of its beta coefficients was Academic Attainment where the ß's ranged from 0.074 in the male model to 0.109 in the female model. The ß in the full model was 0.090.

The interpretation of these collective findings is that of the 17 independent variables in the conceptual model that guided the study, only six were found to be relatively strong as influences on Participation in Postsecondary Education. The relative strength of the relationships consistently appeared in all three models. While these relationships were statistically significant at the .01 level throughout, they were very weak in real terms and suggested that major shifts would have to occur in the effects of the independent variables for a movement from non-participation to participation to take place.

A profile of the most likely participant in postsecondary education in Newfoundland emerged, albeit opaquely, from the regression analysis for the integrated model. The participant could either be a male or female--the relative effect of Gender on Participation was 0.048. In other words, the difference between males and females in terms of Participation was about 1/20, a very small difference.

The person could equally be from a rural or urban community in Region 1. The ß for rurality was 0.037 which meant that on an 0 to 1 Participation continuum, the urban participant would be located at almost 1/25 on the standard deviation scale over a rural participant. In relation to Region 1, the

Avalon Peninsula region in the province, the highest ß for Region and Participation was -0.047 which was for Region 4. The negative sign indicated the participant was likely not to be from Region 4 even though the size of the effect was very low. The effects for the other regions were lower still.

The participant would have graduated from high school with a high average in the provincial public examinations, and was likely to have taken advanced mathematics in high school as well as attended a school where career information services were available. The ß for the Career Information variable was 0.067 and statistically significant at the .01 level in all three models. This effect on Participation was very low and on the 0 to 1 continuum would be located 7/100 of the way towards participation status. In relative terms, the person would have had career information services available in high school. The person could be considered to come from a small family, ß=-0.047 for the effects of Family Size on Participation, whose parents considered education to be important. The ß for Value of Education was 0.128 which would place the participant approximately 1/16 of the way along the non-participation/participation continuum.

It would be speculative whether the person had formulated a career plan. The ß for this variable at 0.044, while statistically significant at the .01 level, was very small and showed that the effects of Career Plans would need to increase more than 40 times for a one standard deviation move to occur in status from non-participant to participant. Finally, the person's continuing sense of well-being would be high, relative to some of the other variables in the equation, and certain barriers related to finances and access to programs would exist that would present obstacles to the individual from continuing with further education.

Direct, Indirect, and Total Effects

The primary purpose of this path analytic technique was to determine whether any of the independent exogenous variables influenced Postsecondary Participation indirectly as a result of the influences of the intervening variables. Indirect effects showed if the influences were mediated or transmitted through the intervening variables. For example, Attachment (to home and community) was shown in the extended integrated model not to be statistically significant as a determinant of Participation. But, Attachment was shown in both the male and female reduced models to be statistically significant as a barrier to Postsecondary Participation with about equal effects on males and females. (The metric coefficients were 0.059 and 0.057 respectively.) The object of examining the indirect effects and the direct effects of the Attachment variable in a path model was to determine if the total effect was a predictor of or a detractor to Participation. It was hypothesized that Attachment was a factor in Participation as a form of barrier which prevented young people from otherwise enrolling in postsecondary education. Other independent exogenous variables were examined accordingly to see whether the presence of indirect effects existed.

Table 5.18 shows the estimated direct effects, indirect effects and total effects for each of the exogenous variables. A t-value was calculated for total

Table 5.18

Correlations, Direct Effects, Indirect Effects, Total Effects, and t-Values for the Effects of the Exogenous Variables and the Intervening Variables on Postsecondary Participation

Outcome Variable	Independent Variables	Correlation (r)	Direct Effect	Indirect Effect	Total Effect	t-Value
Participation	Gender	.097	.048	.022	.070	3.823
	R_U	.099	.037	.008	.045	2.438
	Reg2	.022	.028	-.007	.022	1.166
	Reg3	-.079	-.047	.007	-.039	-2.133
	Reg4	-.033	-.031	-.016	-.047	-2.569
	Reg5	.006	.004	.008	-.004	-0.233
	Plans	.130	.044	.016	.060	3.261
	Famsize	-.123	-.047	-.013	-.061	-3.288
	Attach	-.071	-.022	-.027	-.048	-2.634
	Valued	.286	.128	.079	.208	11.525
	Guidance	.001	.028	-.004	.025	1.330
	Careinfo	.113	.067	.019	.086	4.694
	Advmath	.226	.071	.073	.145	7.933
	Wellbe	.153	.079	.021	.100	5.435
	Lstyle	.065	.019	.019	.040	2.161

Multiple $R = .4739$
$R^2 = .2246$

Note: The t-values are given for the total effect only. A t-value equal to or greater than ± 2.00 is statistically significant at the .05 level.

effect only. All t-values at ± 2.00 or above were statistically significant at the .05 level. The table shows that t-values at this level were estimated for the variables Gender, Value of Education, Rural/Urban, Regions 3 and 4, Career Plans, Family Size, Career Information, Attachment, Advanced Mathematics, Well-being and Learning Style.

Beta coefficients for independent variables that were shown in the extended integrated model analyzed above to be statistically significant with Participation were generally enhanced through the effects of indirect analysis. That is, the size of the total effects was in all cases but one bigger than the ß for direct effects indicating support for the general hypothesis that the exogenous variables were mediated by the intervening variables. The exception was Region 3 where the ß was reduced in size from -0.047 for direct effects to -0.039 for total effects.

With some variables--Attachment, Value of Education, and Advanced Mathematics--the total effects were substantially higher, relatively, than the direct effects. In the regression equation for the extended integrated model, the beta coefficient of -0.022 (direct effect) for the variable, Attachment, for example, was shown not to be statistically significant with Participation. Through the mediating effects of the endogenous variables, the ß for total effect of the Attachment variable increased from -0.022 to -0.048 with a computed t-value of -2.634 rendering it statistically significant at the .05 level. The magnitude of the Attachment-Participation relationship was made twice as strong by the addition of the indirect effects even though in substantive terms the negative effects of Attachment would still be very small and would have to increase considerably for a change from non-participation to participation to occur. Similarly, the size of the total effect for the Value of Education variable was increased to 0.208 from a direct coefficient size of 0.129 through the indirect effects of the intervening variables. The interpretation is that through the influence of the intervening variables, the likelihood was increased that young people who came from families that placed a high value on education would continue on to postsecondary education after high school. For the variable, Advanced Mathematics, as a consequence of the indirect effects attributable to the endogenous variables, the total effect on Participation increased to 0.150 from a direct beta coefficient of 0.071. In other words, the magnitude of the Advanced Mathematics-Participation relationship was made twice as strong through the addition of the indirect effects of the endogenous variables on Participation.

Three other variables in addition to Attachment changed status through the total effects analysis, namely, Region 2, Guidance, and Learning Style. Region 2 which had been shown in the extended integrated model to be statistically significant in its effects on Participation declined in influence in the total effects model. The weak relationship in the regression analysis, $\beta = 0.028$, was made more tenuous through the mediating effects of the intervening variables, $\beta = -0.005$. In effect, Region 2 was shown to have no influence as a determinant of Postsecondary Participation. The Guidance variable was not shown to be related to Participation in the male or female extended models, but it appeared to have a small effect in the extended integrated model with a ß of 0.028 and a probability of .05. The probability level went above .05 in the indirect effects model when the beta coefficient, -0.005, was subtracted from 0.028. This meant that the effect of Guidance on Participation was diminished as it came under the influence of the intervening variables, even though the effect was very low to begin with.

The effect of the Learning Style variable on Participation was not statistically significant in the extended integrated model. In the indirect analysis, the ß of 0.040 was approximately twice as large as the 0.019 beta in the full model and was statistically significant at the .05 level. This meant that the magnitude of the Learning Style-Participation relationship became twice as strong through the addition of the indirect effects. The effects in substantive terms were very small, accounting for 4/100 of a standard deviation shift towards Participation.

Results From the Interview Data

Findings from the series of interviews with youth from the Level 111 cohort, principals and guidance counsellors in the K-12 education system, and principals and senior officials from the postsecondary system and the Department of Education complemented the quantitative results from the survey data. Results are reported generally in percentages and are grouped under the headings of personal, family, school, community, and intervening variables.

Findings are reported only for those independent variables specifically discussed in the interviews.

Personal Variables

During the interviews, two of the four variables in the personal variables category were discussed. (See Figure 2.1 for a complete listing of variables.) The two variables were Learning Style and Career Plans and were either discussed directly in response to a question pertaining to the variables or indirectly in response to a tangential question.

Reference to the variable, Learning Style, was inferred from responses made by youth from the Level 111 cohort to a question on their perceptions of postsecondary education when they were in high school. Students were asked to explain how they thought a postsecondary experience would differ from their high school experience. In response, 55% of them said that more independent and self-directed work would be required. They made such comments as (a) "The teachers help you more in high school. You'd have to listen more in postsecondary and make your own notes; everything won't be handed to you like in high school," (b) "Your study habits will change and you'll be left on your own more," (c) "The teachers won't pamper you like they do in high school," (d) "It would be very different; you'd be more self-directed and independent," and (e) "You're more on your own; people in university and other places expect you to work on your own." Ten percent of the respondents said there would be more "hands-on" kinds of experiences rather than learning from books.

The variable, Career Plans, was discussed in specific terms by the young people and in more general terms by the principals, guidance counsellors, and postsecondary administrators. The majority of youth from the Level 111 interview sample indicated they had not developed a specific career plan by the time they graduated from high school. The interview question specifically asked if they knew what they wanted to do regarding a job or a career when they graduated in June.

In response to the question, 60% said they had no plans in terms of a specific job or occupation. (The majority of these respondents were male--75%.) Three of these youth said they had an interest in tourism or computers but had not developed the interest to a level where they had focused on a particular career in these areas. Their abbreviated responses were "More or less something in tourism," "Something to do with computers," and "Something in computer science." When asked if the lack of career direction influenced their decision not to go on to postsecondary education, 55% said yes and 30% said no. Comments from four of those who said yes were of the nature (a) "If I knew what I wanted to do, I'd have gone then," (b) "I didn't want to spend money on something I didn't want," (c) "I didn't know what was suitable for me," and (d) "It would have made some difference if I knew so I could set my goal on that." Three of the young people who said no to the question said: "The waiting list stopped me from going," "Distance was the real problem," and "Cost was the only factor."

The question on the interview protocol to high school principals and guidance counsellors relating to Career Plans asked whether a lack of motivation and aspiration among their prospective graduates would likely prevent them from furthering their education. Of those interviewed, 85% of principals said yes, compared with 80% of the guidance counsellors. Comments from both groups were focused more on their students' motivation than on aspiration or the terms appeared to be used interchangeably. A sample of the responses were (a) "Some graduates of postsecondary have no work--they are unemployed--so the others have no aspiration to go," (b) "They lack initiative," (c) We are losing good grade 12 graduates who loaf and have no ambition to better themselves," (d) "Kids generally have a lack of direction," and (e) "Kids have no internal drive."

Thirty percent of postsecondary administrators also mentioned the variable, Career Plans. Comments from two of them referred to a lack of motivation or aspiration among the young people for further education. One respondent indicated that more youth aspired to postsecondary education when they were in high school than who eventually enrolled in a postsecondary program. Another said the current long waiting lists for some programs indicated that still more youth wanted to go than there were available places for them in the various colleges.

Family Variables

The variable, Value of Education (in the family), was discussed during each series of interviews. Questions pertaining to the variable in the student interviews asked whether the young people thought a postsecondary degree, diploma, or certificate would help them find employment, whether their parents tried to influence them to continue their education and if the subject was talked about in the home, and whether they had brothers or sisters who had ever gone to a postsecondary institution.

To the first question on the value of education for future employment, 95% of the respondents said yes. They said that "Everything now requires an education," that "The opportunities are better with a degree," and "If you don't have an education, you have nothing." Some respondents who said yes to the question gave qualified answers such as "But there's no guarantee it will get you a job," or "I expect sometime it would help," and "There are a couple of people at the supermarket where I work with degrees and can't get a job anywhere else; it makes me wonder sometimes if it's [further education] any good."

On the question related to sibling participation, 65% of the youth said other family members had gone or were going to some type of postsecondary school, and 75% said their parents had tried to also influence them to attend. Half the respondents indicated the subject of entering postsecondary education was talked about in the family in one form or another. Some said: "Everyone always said I should go on," "Yes, more or less. They left it up to me," or "Yes, you could say that." Others said: "Yes, at first. The topic dropped after I refused to go to----," "Oh, yes, all the time," and "Comments were made occasionally about low wages if you don't have an education."

Principals highlighted the Value of Education variable with reference to the influence of the family in their areas on young people completing high school and continuing on to postsecondary education. The majority of principals, 70%, said the families of their students held a high value for education which was demonstrated through parental involvement in school activities and in attendance at school meetings. The remaining 30% of principals indicated that parents in the area lacked a general concern for education. Comments about the latter group of parents were of the nature (a) "Some families see no value to education," (b) "The parents don't invest time or interest in their children's schooling," (c) "Some parents are not interested in the school or the kids," and (d) "In some families there has never been a high school graduate." In terms of postsecondary participation, 30% of principals said the influence of parents detracted the youth from continuing with further education. Their comments were generally ambivalent in nature; for example, "To some degree," "Yes, I would think so," "Yes, to a degree. Influence is reduced when kids leave home," and "Yes, among the slow group but not the bright ones."

Responses from guidance counsellors to the same questions on family and peer influence showed that 50% of the sample said family influence detracted young people from completing high school and 70% said it negatively affected participation in postsecondary education. With reference to high school completion, the counsellors' comments pertained to the value of education in the family. Examples of comments about the negative parent group included (a) "Certain families don't value education," (b) "Parents don't value education," (c) "They don't value education and send kids the wrong message," and (d) "Education is not valued in the home." Comments on postsecondary education entry also related to a generally low family value on education. Explanations were given in the nature of "We did a survey last year and found that one or both parents of 70% of our grade 7 and grade 9 students had not finished school," "Parents don't want their children to leave home," and "There is a lack of motivation in families."

A minority of postsecondary administrators mentioned the Value of Education variable. They were asked what they thought were some of the impediments to youth participation in postsecondary education. Thirty percent gave responses such as "Youth are losing their sense of value for education," "Many young people do not value education," "Education is not promoted in the home," and "Education is not valued in some areas."

School Variables

The variables, Advanced Mathematics Program and Guidance, were discussed during interviews with principals and guidance counsellors. The question in the interview protocol relating to Advanced Mathematics was whether the course was available to their students. Of the 20 principals interviewed, 90% answered yes to the question. All 10 of the counsellors who were interviewed also said the course was available to students in their schools.

The responses were also positive from both groups to a follow-up question on whether they believed the advanced mathematics course promoted participation in postsecondary education. Ninety percent of the principals said that taking the course promoted participation in the sense that (a) "It helps set high expectations among the students," (b) "Kids have higher skills as a result and also have the prerequisites for entry to most programs," (c) "Kids who take the course develop good study habits," and (d) "It gives students the confidence to go on to postsecondary and to cope with the courses there." Additional comments by the principals revealed reasons why some students neglected to enroll in to or continue with the advanced mathematics course where it was offered. Thirty percent of the principals made such statements as (a) "We have the teachers who could teach it but not the students. Students take the easy route by way of Academic Math to get a higher average mark," (b) "Kids enroll initially but drop back to Academic Math. They don't want to take Advanced Math--not motivated. They want the easier courses," (c) "More students are capable of doing Advanced Math but opt for the Academic Math course to get their average up for entrance to postsecondary," (d) "Only about 25% of students, 7 out of a class of 30, take Advanced Math in this school," and (e) "Kids know they need these higher level courses for postsecondary education so they ask for them. Many students, however, drop down to the lower level courses afterwards."

The views of guidance counsellors on whether the advanced mathematics course promoted postsecondary participation were similar those of the principals. Seventy percent of the counsellors agreed that the course promoted participation. Some of their reasons were (a) "It better prepared kids to go to postsecondary," (b) "They are more confident and competent when they take it," (c) "It lessens the fear students have of going on," (d) "The course broadens their opportunities, makes more options available, and helps them cope better," and (e) "It encourages good study habits in high school." The remaining 30% of counsellors qualified their statements when they said the advanced mathematics course affected students for the better. For example, they said (a) "It better prepares them for university but I'm not sure it makes much difference to participation," (b) "It might make a small difference to participation but not much," (c) "It doesn't inhibit it but I'm not sure if it promotes it," and (d) "I suspect the kids who take these higher level courses are top students who intend to go to postsecondary anyway."

The variable, Guidance, was discussed in each of the interview samples. During the student interviews, 75% of the respondents said their school had had a guidance counsellor who was generally at the school full-time when they were in grade 12 . When asked if they had ever met with the counsellor to discuss their future plans, two-thirds of those who had indicated their school had a counsellor said they had not met. Brief explanations were offered such as (a) "I didn't feel like it--it never crossed my mind," (b) "He would come in class to talk to all the students about jobs, postsecondary education, and the future," (c) "I had no problem--never thought about career information," (d) "No, no reason," (e) "I felt I didn't need to--I didn't know what I wanted to do. I didn't think she could help me make up my mind," or (f) "I didn't feel he could help me. People I know who went had a goal in mind and he could help them, I didn't."

High school principals referred to the Guidance variable in response to questions relating to special school promotions of postsecondary education or to the guidance credit course that was general to the curriculum. Seventy-five percent of the principals said their school had either a full-time or a part-time counsellor on staff whose program they referred to when describing special promotions. The nature of the promotions related to career days or career fairs, visits by the students to nearby postsecondary institutions or speakers from different institutions visiting the school, posters about occupational options, peer counselling, job shadowing, resume writing, the Choices program which provided information on a wide variety of occupations, and the career education credit course. Eighty percent of principals said their schools offered the career education credit course, either as an annual offering or in alternate years.

The guidance counsellors generally identified the same kinds of special promotions of postsecondary participation as the principals had described. Seventy percent of the counsellors said the schools could undertake more promotion if additional guidance time and resources were available. Areas which they identified as requiring more effort were reflected in the nature of their responses. For example, (a) "There could be more integration of guidance and careers with the school curriculum and school activities--too much is currently placed on the guidance counsellor to do," (b) "Provide more information that will help students to know themselves; there is much information available but students don't know how to use it," (c) "Spend more time on career interest surveys and personal interviews," and (d) "Have forums to invite former students to come to the school to speak to the high school students."

Lack of guidance and career counselling in the secondary system were identified by 40% of the postsecondary administrators as impediments to young people's entry into postsecondary education. They cited these problems:

> A lack of guidance counsellors exists in the schools and teachers are not familiar with many occupations to help students become aware of opportunities. Plus, there are no student services in many of our postsecondary institutions.
>
> Although many of our young people have the prerequisites for admission to postsecondary programs, they lack information regarding employment and educational choices. Young people don't see the link between education and the future. They have no direction to their lives, no aspirations. They need counselling, especially on how to process information.
>
> Young people lack career guidance. They are ignorant of how to go about making decisions whether to continue their education. Some of them have commitments to their families or are single parents and they don't have any money or they are too attached to the community. And there are psychological barriers--many don't value education. We need to

examine what counselling services are available to students. We know that counsellors are needed.

Community Variables

The three variables in the study that were subsets of the category called community variables were Region, Rural/Urban, and Attachment. The last variable, namely, Attachment, was directly discussed during the interview series as a factor in postsecondary participation. The other two variables were not discussed but had indirect application in the form of the dispersion of the interview subjects throughout the province. (See Table 5.19.)

Table 5.19 shows the regions of Newfoundland where the interview subjects lived and the number and percentages of those who lived in rural and urban communities. Among the student sample, 40% were from the central region. Representation was comparable between Regions 1, 2, and 4, ranging between 15% and 20%. The lowest representation was from the Labrador region where 5% or one subject was located. In terms of rurality, 55% of the student respondents were from rural communities and 45% from urban communities. Among principals and guidance counsellors, the geographical areas with the highest percentage of respondents was shown to be the central and western parts of the province. The Labrador region, Region 5, had one respondent from each group which was comparable to the single respondent from the student interview sample. In terms of rurality, 60% of the principals and 50% of the guidance counsellors were from rural communities. The

Table 5.19
Region and Rurality of Interview Subjects' Home Communities

Interview Subjects	Region					Rurality	
	1	2	3	4	5	Rural	Urban
Students	4 20%	4 20%	8 40%	3 15%	1 5%	11 55%	9 45%
Principals	3 15%	4 20%	6 30%	6 30%	1 5%	12 60%	8 40%
Guidance Counsellors	3 30%	1 10%	4 40%	1 10%	1 10%	5 50%	5 50%
Post Secondary Administrators	7 53.8%	0 0	3 23%	1 7.7%	2 15.4%	0 0	13 100%

postsecondary administrator sample contrasted with the other three groups in both region of concentration and rurality. Approximately 54% of the subjects in this group were from the Avalon Peninsula area of the province, Region 1. The central region had the second largest representation at 23%. All of the postsecondary administrators were from urban communities.

Rurality was alluded to indirectly as having an influence on Postsecondary Participation through remarks made by the different respondents. For example, one rural principal said in response to a question about whether more young people in Newfoundland wanted to enter postsecondary education: "Kids go from this area not knowing what to expect when they get there. Many return home for the wrong reason; the city is too big, kids get confused about registration lines and a lot of other procedures, and so on."

Another rural principal, in response to the question about the availability of advanced mathematics, physics, and chemistry in his school, said "No, none of them is offered here. Only a basic core curriculum is offered in this school. Students cannot take courses of their choice; and not having access to the higher level courses inhibits the students from going on because they don't have the prerequisites for many postsecondary programs."

A third rural principal said with reference to the question about impediments to postsecondary participation: "Distance is a problem. We are a small remote community of 200 people. It's a culture shock for people to go to the city to school. If they have no family or friends, they run into trouble with staying on." One postsecondary administrator responded in relation to the question about impediments: "Education is not valued in some parts of rural Newfoundland. It is not promoted in the home. There is also limited access to programs in some areas of the province."

Attachment to home and community was said by respondents in the four interview samples to have a negative influence on postsecondary participation. Ten percent of the students said they would have had to leave home to go to postsecondary education which they did not want to do, and therefore chose not to apply. Thirty-five percent of the principals identified "not wanting to leave home" as a barrier to participation and suggested as reasons (a) "Distance to a postsecondary institution is a problem--kids don't want to leave home to go," (b) "Having to leave to go to school in a larger centre after being in a small community all their lives is a problem for many of them," and (c) "Some kids don't want to leave home, they are too attached to the community."

Thirty percent of the counsellors also said that students in their schools had a strong attachment to their home community which prevented them from furthering their education. The nature of their comments were similar to those of the school principals and generally reflected that young people felt close to home and did not want to leave it to pursue postsecondary education in the city.

Two of the postsecondary administrators also made reference to community attachment as a barrier to participation. They said that some young people would not leave their home areas because of it. In contrast, another administrator said that rural youth in Newfoundland did not perceive leaving home for further education to be a problem. The administrator said that "Most young people want to get in the city and away from their home communities."

Intervening Variables

The influence of parents vs. friends, teachers, and others on Participation was mentioned in the student round of interviews, usually in response to questions about whether they were encouraged to continue their education. Eighty percent of respondents said their parents encouraged them to go and 75% said they were encouraged at school to continue. In the latter case, teachers were cited by 60% of the young people as the ones who encouraged them. In descending order, the guidance counsellor, principal, and fellow students were mentioned by 30% of the students as others who provided encouragement to them to continue their education.

Barriers to participation was discussed during the interview series by all the subjects. The nature of the barriers identified by students were as follows: (a) costs or getting the money to go--cited by 65% of the respondents, (b) meeting the admission requirements and being accepted into a program of their choice--cited by 40% of students, and (c) other impediments of an idiosyncratic nature such as needing to pay off a car loan, having a job commitment, being a single parent, and not knowing what program to take. School principals were asked what some of the barriers might be to students in their area that would inhibit entry into postsecondary education. Many gave multiple responses such as (a) finances, i.e., finding the money to attend--cited by 60% of principals, (b) attachment to home and community which caused many young people to not want to leave home to go to school--cited by 35%, (c) lacking the academic prerequisites for admission to many postsecondary programs--cited by 30%, and (d) personal characteristics such as lack of family encouragement, lack of interest by the young people for further education, contentment with an income from unemployment insurance (UI), perceptions of limited opportunities for post-schooling employment, and problems associated with student loan applications. The latter category of reasons were cited by 65% of the principals as impediments to participation.

Guidance counsellors generally gave similar multiple answers to the barriers question that the principals gave, namely, (a) the problem of youth not having the money to pay the costs of postsecondary education--cited by 70% of counsellors as a barrier, (b) low general motivation among students--cited by 60%, (c) negative family influence--cited by 70%, and (d) tangential reasons such as lack of career direction by many young people, insufficient career counselling and career information in the schools, the UI syndrome, not wanting to leave home, and an inability to meet admission requirements--collectively cited by 90%.

Postsecondary administrators, in their responses to the question of Barriers to Participation, identified the following as impediments to young people: (a) obtaining the money to pay for postsecondary education--cited by

20% of administrators, (b) gaining access to popular programs--cited by 30%, (c) lack of academic prerequisites for admission to some programs--cited by 20%, (d) administrative problems with the student loans program and low ceilings on loans--cited by 20%, and (e) related idiosyncratic problems such as lack of career counselling, community attachment by some youth who do not want to leave home to get further schooling, negative impressions of postsecondary institutions, low motivation, low family value for education generally, and insufficient information on occupations and educational options. The latter collection of reasons was cited by 70% of administrators.

Summary

The independent variables that were associated with Participation in Postsecondary Education consistently appeared in the various analytical models used in the study. In the extended model for males, 3 of 14 exogenous variables were shown to have bigger effects, statistically, on Participation than all the others. They were Value of Education, Advanced Mathematics, and Well-being. Similar effects were shown for three of five intervening variables, namely the variables Academic Achievement, Barriers, and Academic Attainment.

The same source and intervening variables had comparable effects on Participation in the extended model for females. All six of these variables appeared as determinants of Participation, statistically, in the extended integrated model although in substantive terms the effects were very small. None of the independent variables, separately, would move the respondents more than one-tenth of the way along a non-participation/participation continuum.

In the model showing direct, indirect and total effects, 12 independent variables were statistically significant determinants of Participation. Only three of these showed beta coefficients at 0.100 or above, namely, Value of Education, Advanced Mathematics, and Well-being. These three variables, when combined with the endogenous variables, Academic Achievement, Barriers, and Academic Attainment, comprised the main independent variables that were found to be related to Postsecondary Participation.

Findings from the series of interviews with various stakeholders were presented for 10 of the independent variables. Expressed generally in percentages of responses, the results from the interviews complemented the findings from the survey data in that interview responses gave added weight to the influences of the parallel variables found in the regression analyses. For example, three of the variables that were highlighted in the numerical analyses, namely, Advanced Mathematics, Value of Education in the Family, and Barriers, as being most influential on Participation also received extensive treatment during the interviews. The importance of Advanced Mathematics to Participation was confirmed by the principals and guidance counsellors. All the stakeholders commented that it was important for parents to value education highly because it largely determined whether they encouraged their children to attend. And the nature of the barriers to Participation that were identified in the regression analyses was similar to the kinds of barriers the stakeholders identified, with the main impediments being lack of money, meeting the academic prerequisites, inadequate access to programs, negative family influences, and an encumbering attachment to home and community. The objective results from the quantitative and qualitative analyses provide a background against which the findings are discussed in subjective terms in the next chapter.

Chapter 6

Discussion of the Results

Introduction

The preceding analysis was carried out according to the general framework outlined for the study in Chapter 2. Pearson correlation coefficients were calculated for all the personal, family, school and community variables selected as exogenous independent variables in the study, as well as on the five endogenous variables hypothesized as intervening variables on the dependent variable, Participation. Multiple regression coefficients were estimated using multiple models: male and female reduced models in which the endogenous variables were regressed on the exogenous variables; male and female extended models which estimated the effects of all the independent variables on the dependent variable; a reduced integrated model in which the endogenous variables were regressed on the exogenous variables and in which the variable of gender was included; and an extended integrated or fully recursive model which estimated the effects of all the independent variables on the criterion variable.

Direct effects, indirect effects, and total effects were then estimated for the extended integrated or full model which included the effects of all the source variables plus all the intervening variables on the dependent variable. Fifteen independent variables were shown to have statistically significant effects on Postsecondary Participation in the full regression model. Eleven source variables were shown to have indirect effects on Participation in addition to the direct effects estimated in the regression analysis.

Discussion of the effects of the independent variables on Participation in Postsecondary Education is conducted with reference to the various regression models tested, and in order of presentation generally follows the conceptual model. Following the order of the conceptual model means first discussing the respective source variables which were clustered under one of either personal, family, school, or community headings, and then the intervening variables. Where appropriate, relevant information from the interviews with important stakeholders is integrated with the statistical findings from the numerical analyses.

Personal Variables

The Career Plans variable was shown to be only slightly related to Participation in Postsecondary Education. In all three models, the effects in real terms were very small. The correlation coefficients between Plans and Participation, while in a positive direction, were very low. Similarly, the regression and indirect effects analyses yielded low beta coefficients that showed the relative effects of Plans on Participation, again while positive, were very small. In the indirect analysis, the total influence of Plans on Participation was increased slightly through the mediating effects of Academic Achievement and Significant Others, but the differences in real effects were negligible. The biggest effect that Plans had in the indirect effects model was on Academic

Achievement. The size of the metric coefficient indicated that a unit change in Plans accounted for approximately two-thirds of a change in Academic Achievement. This can be considered a substantial effect and when one considers that Academic Achievement was found to have the single greatest effect on Participation over all the other independent variables in the study, the influence of Plans cannot be entirely discounted.

Evidence from the interview data was sufficiently strong to indicate the importance of career plans on entry to postsecondary education. Commentary from the students, high school principals, guidance counsellors, and postsecondary administrators focused on the negative effects on youth of not having a clear direction to their lives. Without a plan of some kind of what they wanted to do after high school, many youth tended not to enroll in postsecondary education.

Evidence from the literature on the effects of career plans on educational attainment was stronger than that found in this study. Most of the other studies that examined aspirations or plans treated them as the criterion variable which is of little help here. However, studies that incorporated plans as an endogenous variable all found that having a career plan positively influenced educational attainment. (See, for example, Conklin & Dailey, 1981; Sewell, 1971; Carpenter & Western, 1982, 1984; Carpenter, Western & Foster, 1980.) An important point for the current study is that while the findings were numerically very small in all the models for the Career Plans-Participation relationship, they conformed to the relationship theorized in the literature and to the effect of Career Plans on Participation that was hypothesized for the variable in Chapter 2.

The analyses showed that almost no difference in effects existed between Gender and Participation. While they were statistically significant, the size of the respective correlations and beta coefficients showed that both males and females were equally likely to enter higher education. (The positive direction of the coefficients suggested that females were slightly more favoured to go than were males.) The regression analysis in the extended models for both males and females indicated that most of the predictors of Participation for males were similar to the predictors for females but the size and direction of the effects as shown by the metric coefficients, however small, generally favoured females. (See Table 5.17.) Such a finding of negligible differences was unexpected. Table 1.1, Chapter 1, showed a five-year profile of postsecondary participation for each province in Canada and showed unequivocally that during those years the percentage of female enrollments surpassed enrollments by males in all provinces. It was anticipated in this study that females would be more inclined towards postsecondary education than males, but the strength of the relationship between Gender and Participation as shown by the regression coefficients was generally too weak to support the hypothesis. However, the raw data showed that a differential did exist. In Survey 2, 53% of the females, compared to 47% of the males, had enrolled in postsecondary education.

Despite the statistical evidence in recent years that female participation in higher education had surpassed participation by males, the literature generally supported the thesis that males were more advantaged than females on many of the variables pertaining to educational attainment. Sewell (1971) found that when socioeconomic status and academic ability were controlled, women had a lower probability than men of obtaining further education after high school. Rosen and Aneshensel (1978) and Danziger (1983) had both found that gender differences in aspiration favoured males because females perceived fewer occupational options available to them compared to the options available to men. In Canada, Looker (1993) found that females expected a disruption to the progress of their careers because of anticipated future child-rearing responsibilities whereas males did not. Gaskell (1987), Guppy (1988), and Guppy and Pendakur (1989) all found that women from families with lower than average education studied full-time less frequently than did men and women from better educated families, and the range of their program choices in college and university was more restricted than was the range of program choices for males.

In terms of the likelihood of undertaking studies in postsecondary education, however, findings from previous research generally supported the notion that little difference was apparent between males and females over the last two decades. (See Carpenter & Western, 1984; Elsworth & Day, 1983; Boyd et al., 1985; Creese, Guppy & Meissner, 1991; Guppy, 1984; and Parsons, 1974, among others.) In this sense, the findings of the current study contribute to that perspective. While some inequalities are believed to still exist for females, the disparity in actual participation in higher education has effectively disappeared. Gender was found in this and previous research to be neither an advantage nor a disadvantage to participation.

A feeling of general well-being was weakly associated in real terms with Participation in Postsecondary Education although the variable was statistically signigicant at the .01 level in all three extended regression models. In the corresponding correlational matrices, Well-being correlated positively with Participation. A slightly higher correlation was recorded for females over males which meant that this variable was slightly more associated with female attendance in Postsecondary Education than it was for male attendance. The relevant metric coefficients were also slightly higher for females but insignificant in real terms. The indirect effects were also unimportant, substantively, in enhancing the influence of Well-being on Participation. The small increase over direct effects was attributable to the influence of the variable on Academic Achievement, Academic Attainment, Vocational Self-concept, and Significant Others. (See Tables in Appendix J.)

The Well-being composite was made up of individual variables that referred to respondents' satisfaction with life as a whole, with their general career outlook, and their outlook for the future. (See Chapter 4.) Those young people who scored highly on these variables were generally very satisfied with life in 1990 and they indicated that things had turned out much better than they had expected since leaving high school. Managing their personal finances and finding employment had also not been a problem for them. It was hypothesized that young people with these attitudes and personal situations would have had less anxiety in their lives. Consequently, they would be more likely to make rational decisions about their careers and to participate in higher education as part of those career plans than were young people who were generally dissatisfied with their status. However, the total effects of Well-being on Participation were substantively very small and would have little effect on changing non-participants into participants. While the findings showed high statistical significance and generally supported the theoretical perspective found in the literature about the absence of personal anxiety on positive decision-making (Hartman et al., 1985; Fuqua & Seaworth, 1987), a continuing sense of well-being had little real effect in this study on the decision to enter postsecondary education.

The Learning Style variable had a very low direct effect on Participation in Postsecondary Education. It was not statistically significant in any of the extended models as a predictor of Participation. However, the application of indirect effects analysis changed the status of the variable. While the indirect effect was very small, it nearly doubled the magnitude of the Learning Style-Participation relationship (see Table 5.18) to the point where the total effects coefficient was statistically significant, although in real terms the actual effects on Participation were still very small. Nevertheless, the changed status lent support to the proposition that was established in Chapter 2 for the Learning Style variable.

The question in the Level III, survey 1 questionnaire which pertained to the Learning Style variable was related to whether the students in the sample preferred to learn on their own from books and through practising or through a more pragmatic approach of watching other people do things, taking practical courses, or learn by helping someone do the job. It was hypothesized that those who preferred learning in the first style would be able to cope better academically in postsecondary education than those who preferred a more practical "hands-on" style of learning. The findings statistically supported the hypothesis but in substantive terms did not show that Learning Style was a determinant of Participation. Rather, they tended to support the ambivalent comments made by the young people regarding learning.

In the student interviews, of the students who referred to coping academically in postsecondary education as a worry, six said it would not be a problem. Their typical comment was "I think I can handle it." Two other students indicated their study habits to be a concern to them and that the anticipated academic workload in postsecondary education bothered them. One student commented: "It worried me all the time if I would be able to handle the work."

Family Variables

Family Size was consistently shown to have almost no effect on Postsecondary Participation in Newfoundland. The finding was contrary to the hypothesis formulated for this variable and to the theoretical perspective found in the literature. Family Size was negatively associated with Participation in all the models, which conformed to the theory, and was statistically significant in all three, but the real effects were negligible. The correlation coefficients between Family Size and Participation did not go beyond .14 in any of the models and the relevant regression coefficients were equally very low. In real terms, the negative effects of Family Size had no effect on detracting respondents from participating in postsecondary education.

This finding was unexpected because of the compelling evidence in the research literature that large families inhibited educational attainment, especially attainment by females. (See Boyd et al., 1985; Breton, 1972; Rosen & Aneshensel, 1978; DeGraaf, 1986; Conklin & Dailey, 1981.) These perspectives found some support in this study but the real effects were too low to say with conviction that the findings supported the theory advocated in educational attainment research.

The second of the family variables examined in the study was the Value of Education in the Home. The variable had the third highest beta coefficients in each of the three extended models, and its indirect effects contributed 62% to the total effect. That is, the intervening variables mediated 62% of the total effect of the Value of Education on Participation. The correlation and regression coefficients between the Value of Education and Participation indicated that the more the family viewed education as a valuable commodity or undertaking, the more probable it was that children from those families would continue with their education following high school graduation.

The regression analyses in the three reduced models--males, females, and integrated, showed that the effects of the Value of Education were generally greatest on Academic Achievement and Academic Attainment. In relative terms, the effects of Value of Education on Academic Achievement in the reduced models were bigger than the effects of all the other independent variables except Advanced Mathematics, when the other variables were held constant. It was also shown that the effects of Academic Achievement on Participation were higher than the effects of any of the other independent variables, other things being equal. It was clear that the linkage between Value of Education and Participation was mainly due to the linkages between Value of Education and Academic Achievement and Academic Attainment.

The relationship between Value of Education and Barriers was also comparatively strong, other things being equal. The hypothesis for Value of Education as it related to the Barriers variable was that the more that education was valued in the home, the less severe would be the perceived barriers that could prevent high school graduates from participating in postsecondary education. That is, given one home where education was highly valued and another home where it was held in low esteem, it would be less probable in the first home than the second that a young person would be detracted from deciding to continue with schooling following graduation. Encouragement of the young person was more likely from family members in home one, especially from the parents, because of the positive view the family held towards education. The reverse would be true in home two.

The results from the regression analysis in the three reduced models showed that Value of Education in the Family was the single most important factor in eliminating barriers to postsecondary participation. This meant that when controlling for the effects of the other exogenous variables in the equations, the Value of Education variable was estimated to have the highest of all effects in reducing barriers to continuing one's education. In other words, if a high value were placed on education in the family, it would be easier to overcome the structural barriers that might exist to prevent the children in that family from participating in postsecondary education.

These findings were not surprising considering the overwhelming support given in the research literature to the positive effects of parental encouragement on educational attainment. (See Conklin & Dailey, 1981; Danziger, 1983; Turrittin et al., 1983; Carpenter & Fleishman, 1987; Rosen & Aneshensel, 1978; Williams, 1972, 1987.) As stated in Chapter 2, the Value of Education variable was usually operationalized in the literature as parental encouragement. The hypothesis generally was that the more that children were encouraged by their parents to go to college or university, the more likely the children were to attend. The current study was similar to those listed above in that the results supported the general hypothesis. Most of the high school principals who were interviewed were positive in their comments about the extent to which the parents of their students valued education. They acknowledged that family influence was paramount to young people in completing high school and to their going on to further education. Typical comments were that "Most people are very supportive of their kids," "Parents generally encourage their kids to stay in school," "Family influence is very strong in supporting their children in school," and "The families here support the school." Particular cases were mentioned where the opposite was the norm. Many families were disinterested in their children's education and did not show any support by coming to meetings or participating in other school activities. Unemployment was high in some communities and "the U.I. syndrome" was strong. "Many kids take it [U.I.] for role modelling and openly say they aspire to the same lifestyle." The following remark by one principal aptly reflected the reaction of most of them to the question on family influence on education:

> There are some family problems but they are not extensive. Some parents are not interested in the school or the kids. They don't come to any parent-teacher meetings and are apathetic towards their kids. They don't give any direction to them. But, 90% of the parents give their full cooperation to the school.

Many guidance counsellors, however, were less complimentary about the families of their students than were the principals. Seventy percent of the counsellors said that parents in their area held little regard for education either for their children completing high school or for going further. "Parents don't value education," "The family has the most effect on detracting them," "Certain families don't value education," "Education is not valued in the home," and "Parents are more interested in themselves than the kids," were reflective of the nature of the responses that were made. One particular comment offered a different perspective:

> Some families are at loose ends: they say they don't know what to do with the kids. Parents value education but seem helpless; they leave things up to the teacher as far as school goes. Only a few show up to PTA meetings and parents' night. Many parents in this area have a low level of education; there are more problems around than are apparent.

The generally negative tone to the responses from guidance counsellors on family influences, compared to those of the principals, probably reflected the nature of the students the counsellors dealt with on a daily basis. If most were "problem students," it would probably be expected that generalizations would unwittingly be made to the whole school. Principals, on the other hand, could have been unintentionally optimistic because they deal with parents in a different context than do many of the guidance counsellors, and principals would not see some of the students that counsellors see on a daily basis. The conclusion that was apparent from both series of interviews was that parental and family values for education were considered to be instrumental in either a positive or negative way to determining whether young people completed high school or went on to postsecondary education.

Responses from the student interviews indicated that a little more than half of them were encouraged by their parents to obtain further schooling. Of those who had chosen not to go, 11 said their parents wanted them to enroll in postsecondary education after high school, although only eight of those respondents said the subject of further education was actually talked about in the home. All but one of the young people said they, themselves, placed a high value on postsecondary education and believed that without it, obtaining employment would be difficult. Of those interviewed, 13 of the 20 indicated they had either brothers or sisters who had undertaken some form of postsecondary education.

School Variables

The three exogenous variables that pertained to school influences on Postsecondary Participation included Advanced Mathematics, Guidance, and Career Information. Advanced Mathematics was shown to be a statistically strong determinant of Participation in all three extended models even though its substantive effects were small. Table 3.1 showed that less than 18% of the respondents in both samples had taken advanced mathematics in high school. In response to a question to high school principals about advanced mathematics, 90% of them said during the interviews that the course was available in their schools if students wished to take it.

Indirect effects on Participation of Advanced Mathematics were shown to be slightly greater than the direct effects. What this meant was that Advanced

Mathematics had a stronger influence on Participation when its effects were transmitted through the intervening variables. In effect, the magnitude of the relationship was made twice as strong by the indirect effects. When the five endogenous variables were separately regressed on the exogenous variables in the reduced integrated models (see Appendix J), Advanced Mathematics had statistically significant effects on all but the Significant Others variable. Its strongest influence was on Academic Achievement where it was shown to be a relatively bigger determinant of Academic Achievement than any of the other variables.

The effects of Advanced Mathematics on Academic Attainment, or high school graduation, in real terms were small but stronger in comparison to the effects of most of the other variables on graduation. The finding can be interpreted to mean that students who took Advanced Mathematics in high school were more likely to graduate than were students who did not.

The Advanced Mathematics variable was the second most influential variable, when the effects of the others were controlled, in reducing the effects of perceived Barriers to Postsecondary Participation. The regression findings between Advanced Mathematics and Barriers, when Barriers was regressed on the exogenous variables in the reduced integrated model, showed that for students who had taken the advanced mathematics program in grade 12, the barriers which they perceived to exist that could prevent them from continuing their education were less threatening than for students who did not take advanced mathematics in high school.

The views of principals and guidance counsellors on the value of the advanced mathematics course to enhancing postsecondary participation were nearly unanimous. Of those interviewed, 90% of principals and 80% of counsellors felt the course promoted participation by helping the students to cope with the academic workload in postsecondary education. The mathematics course "better prepares them," "broadens their opportunities," "makes more options available to them," "the kids have higher skills," and "it promotes participation because the kids have the prerequisites to get in." However, five of the principals commented that many students did not take the advanced mathematics course because it carried the risk of lowering their overall grade average. Students opt instead "for the easy route by way of the academic math program." One principal said that not more than 25% of the grade 12 students in his school take the advanced mathematics course. The rest of the students take the academic course. An issue that needs further research with this variable is the perceptions high school students have of the advanced mathematics course; of its degree of difficulty, how it is taught, its real benefit to gaining entry to and coping with postsecondary programs later on, the success rates of students who take the course, and their own individual ability to effectively perform and deal with the more complex material in the course.

The one variable that did not emerge as influential to Participation in either the extended male or female models but did emerge in the extended integrated model was Guidance. The Guidance composite was defined in terms of the extent to which respondents took advantage of the availability of guidance services when they were in high school by consulting with the counsellor about their career plans. The results of the regression analysis in the full model showed that when students accessed the guidance services, the more probable it was that they would continue their education after high school graduation. The relative statistical effect was very small, however, and in the path analytical model was diminished even more in magnitude to the point where it was no longer statistically significant. What this meant was that the relative influence of Guidance as a determinant of Postsecondary Participation was lost as it came under the influence of the intervening variables. Guidance was not a strong variable to begin with, having a negligible correlation coefficient between it and Participation in the combined sample. (See Table 5.3.)

When the endogenous variables were regressed on the source variables in the full model, Guidance was shown to have a small negative effect on both Vocational Self-concept and Significant Others. The apparent conclusion to be drawn from such a finding is that the more that students accessed guidance services in high school, the less were they likely to develop a positive vocational self-concept or to consult with people other than their parents about their career plans. Such conclusions do not make sense, and are contradictory to what was expected for this variable. Further, the conclusions are incongruent with empirical findings from the literature and the general views of educators regarding the merits of a guidance program in the school.

More research is obviously needed to examine the role of guidance in vocational development. The negative perceptions that high school students have of guidance counsellors is virtually legend. Yet, of students who actually visit the counsellor, this study found that most of them received some benefit from the visit. The problem seems to either be with "not visiting" the counsellor or with the quality of the benefit received when students do visit them and talk about the experience afterwards with other students. Or the problem could simply be related to the image which students have of guidance counsellors generally or is related to the nature of the messages counsellors typically send out to students.

Another possible explanation for the negative relationship between Guidance and Vocational Self-concept in this study could be that the relationship was curvilinear rather than linear. In other words, students who consulted the most with the guidance counsellor on their plans needed the most help because their vocational self-concept was lower than that of other students who did not access the service. At least they did not think they could easily learn the occupations, or did not want to, that were listed on the question in the survey instrument. The latter students either needed the service less or did not need it at all.

Information from the interviews with school principals and guidance counsellors indicated that their guidance programs helped students with their career choices because of the individual career counselling that was provided as well as the occupationally related literature that was disseminated. In their view, guidance programming enhanced participation in postsecondary education. Their schools promoted such activities as the Choices program (a computer interactive occupational inventory assessment program), career fairs and career days, hosted speakers from various public and private postsecondary institutions in the province, provided peer counselling and job shadowing, and promoted visitations by the students to the University, technical schools, and community colleges. These activities were in addition to the career education 3101 course offered in most schools and which students took as a credit.

The opinions of the counsellors and the principals differed, however, on the merits of the career education 3101 course. Eighty percent of the counsellors said the students enjoyed the course and found it helpful, either the whole course or parts of it. Counsellors said they got good feedback from the students on the course. Principals, however, felt the course was generally not of much value. Only 40% said they thought the students found it helpful and only then when the students were filling out applications to postsecondary institutions. The others felt it was not a good course for their area, that it was tailored for larger urban centres, and that many students looked upon it as being elementary.

Consequently, many students did not take the course seriously. A positive remark by one principal was insightful:

> It depends on how it is offered; several years ago the course was non-substantive. Now, the curriculum is locally developed; we make more use of people in the community and visitors from the postsecondary institutions. Former students also come to the school and talk to the kids.

Of the former students in the sample who were interviewed, 75% said they had had a guidance counsellor in high school. Half the respondents, however, had never met with the counsellor to talk about their career plans. Three of the six who said they met with the counsellor said the meeting was helpful and they received valuable information as a result. The other three said the meetings were unproductive. One student remarked: "Having a counsellor helps a bit but it seems they can only help you when you know what you want to do. Teachers know students better." Two-thirds of the former students who said they received encouragement in school to continue with their education specifically named teachers as the staff member who encouraged them the most.

The Career Information variable was shown to exert a relatively stronger influence on Postsecondary Participation than many of the other independent variables in the extended male, female, and integrated models. However, in all three models, plus in the indirect effects model, its real effects were very small even though they were statistically significant.

The regression analyses in the reduced and extended models for males and females consistently showed that the size of the effect of Career Information on the intervening variables and the criterion variable generally was slightly larger for females than males. (See Tables 5.4 to 5.15.) Saha (1982) had found much the same thing in Australia but in reverse. The effects of career information for girls had little direct effects on their career orientations but it did for boys and in a unique way. Boys who had claimed they knew little about careers aspired to higher occupations than did boys who said they had some knowledge about careers. Empson-Warner and Krahn (1990) found the latter result equally applied in Canada for both sexes. More than 70% of the high school students they studied had aspired to middle management occupations at a time when only 24% of all jobs in the Canadian labour force were in middle management. The paradox in both countries was seemingly due to insufficient or inappropriate career information, a dilemma posed by Reubans (1981) for youth transition difficulties in Europe.

An explanation for the differences in the effects of Career Information between males and females in the current study is difficult to provide simply from the results because the differences in the size of the coefficients were so small. The Career Information variable was constructed from questionnaire items that referred to whether the respondents had visited a postsecondary institution, had received written information about the institution, or had heard a speaker from the institution. Presumably, the male high school students were equally exposed to the same visiting speakers and information, and had an equal opportunity to visit respective postsecondary institutions as did the female students. The marginal differences in effects that consistently appeared might be due to the differences in impact which such visitations, speakers, or information had on the two groups of students. Either the females received more information, or absorbed more of what they did receive, or treated it slightly differently than did the males. For both groups, the conclusion from the finding was the same, namely, the more information that was received, the more likely were young people to continue on to postsecondary education.

Another anomaly was evident in the indirect effects analysis. It was hypothesized in the study that Career Information would positively influence one's Vocational Self-concept through exposure to information on different occupations and careers. However, its effects on Vocational Self-concept were not statistically significant although the coefficients were in the expected direction. This might have been due to the nature of the Vocational Self-concept variable which asked whether respondents thought they could perform certain occupations easily rather than provided information on the actual occupations or careers. In other words, the explanation for the lack of statistical significance could lie with the nature of the outcome variable in this case rather than with the effects of the Career Information variable. Further research would be needed to clarify the issue.

The indirect effects of Career Information on Participation were largely through Academic Achievement and Academic Attainment. In relative terms, its effects were small on Academic Achievement and only slightly larger on

Academic Attainment. It had the second highest beta coefficient in the equation for Academic Attainment in the reduced integrated model. (See Table 5.2a, Appendix J.) The interpretation of the finding is that the more that career information was received, the greater was the likelihood of the person graduating from high school. The actual process by which it affected Academic Achievement and Academic Attainment cannot be determined from the current analysis.

The importance of career information to the young people was made clear in the interviews with those who had not gone on to further education following high school. Forty-five percent of the respondents said they did not know what they wanted to do regarding a job or a career when they graduated, and approximately 70% of these said this lack of direction influenced their decision not to go. One young man said he "didn't want to spend money on something I didn't want." Another said, "I didn't know what I was going to do, what was suitable for me." A student who was typical of many in rural Newfoundland said: "I didn't know anything about what to do afterwards [after graduation], to go places like a university or postsecondary school. My school was small and I knew everyone there. The community was small too."

Community Variables

Geography and Attachment to home and community comprised the factors hypothesized to be related to Postsecondary Participation. Geography consisted of the designation of one's community as either rural or urban and to the region in the province where it was located. Attachment related to a sense of closeness to one's home community, to a degree that it often inhibited young people from leaving the community to go to a larger centre to undertake postsecondary education.

The Rural/Urban variable was shown in both the regression analysis for the three extended models, and in the indirect effects analysis, to have little influence on Participation in Postsecondary Education. Moreover, the raw correlation between Rural/Urban and Participation was .10 or less. The regression coefficients were statistically significant in both the extended female model and in the extended integrated model where the direction favoured urban youth but the effects were too small to make any real difference. Consequently, the interpretation is that young people from rural areas in Newfoundland were equally likely as young people from urban areas to continue their education after graduating from high school. This finding did not conform to the hypothesis formulated for the variable in the study nor to the findings of previous research. (See Schonert et al., 1981; Williams, 1987; Elsworth & Day, 1983; Turrittin et al., 1983.) The belief was that rural students would be disadvantaged because of locality and were not as likely to enter higher education as were urban students. The findings for this study in real terms were too low to support that view.

The rurality effects were stronger over a range of other variables. The correlation coefficients between Advanced Mathematics and Rural/Urban in the three samples--male, female, and integrated--indicated that Advanced

Mathematics pertained more to urban schools than rural schools. This finding was not surprising since the advanced mathematics course is often not available to high school students in small rural schools, especially in multi-grade or in all-grade schools which are characteristic of many rural communities in Newfoundland. Approximately 69% of all schools in Newfoundland in 1992 were rural schools, of which 35% were classified as small schools. Of the small schools, 32% were in rural communities. (See Newfoundland Department of Education Statistics, 1991-92, p. 4.) In the past three years, the provincial Department of Education has introduced the course to some of those schools by way of distance education.

Barriers as an intervening variable was also shown in the regression analysis for the reduced integrated sample to be more pertinent to rural communities although the relative size of the real effect was very small. The direct effect of Rural/Urban on Participation in the extended integrated model was referred to above as favouring urban respondents. These relative effects indicated that while rurality affected Participation, albeit in a very small way substantively, it also affected Barriers and also in a way that militated against rural youth. All of the individual items that made up the Barriers composite referred to obstacles of cost and availability of money in terms of being able to proceed to postsecondary education. It is not surprising that these factors would pertain more to rural areas in Newfoundland than to urban areas. The opportunities for youth employment are greater in urban communities and there is less likelihood that urban parents would experience the higher levels of seasonal work and unemployment that characterize many rural communities. As well, rural communities were shown to have a greater proportion of larger families than urban communities. Previous discussion in Chapter 2 suggested that larger families generally had fewer financial resources to support their children's attendance in postsecondary education. Taken collectively, the effects of rurality act *a priori* as bigger barriers to postsecondary entry for rural youth.

In the reduced integrated model for the Significant Others variable, the relative size of the effect of the Rural/Urban variable was small but it was still one of the more powerful influences on Significant Others in the equation in terms of magnitude of effect, relative to the other beta coefficients. This suggested that a dynamic was occurring in rural areas in terms of the role of parents vs. significant others that was not happening in urban areas. The finding closely paralleled the results of the regression analysis in the reduced male and female models. That is, the variable, Significant Others, was shown to be affected by rurality in the reduced models for the three samples with the relationship being consistently negative. The interpretation is that more rural young people of either sex generally consulted with their parents than with others about their career plans than did urban young people.

Responses made during interviews with young people, two-thirds of whom were from rural areas, clearly showed they were encouraged by their parents and teachers to continue their education. The influence of their peers was considered to be negligible. Of those interviewed, 75% said their friends had no influence on their respective decision not to continue with schooling, lending further credence to the belief that parents primarily influenced youth in rural areas in the decision about whether to continue their education.

Regional effects on Participation were generally very low. The Avalon Peninsula region (see Figure 2.2, Chapter 2) was selected as the constant in the regression equations against which other regions were compared. The regression analyses showed that the central and western regions were statistically significant in their negative effects on Participation, but in substantive terms, those negative effects would have no influence on respondents from those areas participating in postsecondary education. The results in general showed that regional effects were negligible on Participation.

These results are not surprising. Williams (1987) had pointed out the complexity of including region as an independent variable in educational participation studies. He felt the variable was a proxy for many other phenomena that could explain differences in participation. Currently in Newfoundland, mobility, in terms of access via transportation to larger centres, is restricted on a daily basis only in the most remote communities. Distance is an inherent factor and undeniably prevents daily commuting for many people to a centre where a postsecondary educational institution would be located. But, generally, access is available, albeit with some encumbrances, for most Newfoundlanders who want to attend a postsecondary institution in order to further their education. The fact that the one university in the province drew most of its students between 1983-1986 from Region 1 (Wilson, 1991) is not unexpected. Proportionately, Region 1 is where most Newfoundlanders live. Wilson did not indicate what the proportional attendance at university was based on the population of each respective region so it is difficult to answer the question of the "real" regional representation at university. Factors other than region undoubtedly contributed to the reason why the actual numbers of students during 1983-1986 were primarily from Region 1.

Community Attachment was shown to have no direct effects on Participation in Postsecondary Education but, when its effects were transmitted indirectly through the endogenous variables, the relationship was statistically significant. The Attachment composite was estimated to have an alpha reliability coefficient of less than .60 in the preliminary principal components analysis. Normally, it would have been dropped from further analysis but for reasons presented in Chapter 4, it was retained. The variable did not appear as a statistically significant determinant of Postsecondary Participation in any of the extended models. However, Attachment was statistically significant, consistently, with the intervening variables of Academic Achievement, Vocational Self-concept, and Barriers in all three reduced models.

The direction of the relationship was negative with the first two variables, i.e., Academic Achievement and Vocational Self-concept. In statistical terms, this meant that on average for the three models, a 1.00 standard deviation change in Attachment would be accompanied by .081 of a standard deviation reduction in the effects of Attachment on Academic Achievement, and by .076 of a standard deviation reduction in the effects on Vocational Self-concept. In theoretical terms, the regression coefficients meant that the higher the level of attachment to home and community, the less likely was the academic achievement and the vocational self-concept of the respondents to be high. Also, a high level of attachment was detrimental to further education in that it acted as a barrier to prevent participation in postsecondary programs. While the regression coefficients between Attachment and the endogenous variables, Academic Achievement, Vocational Self-concept, and Barriers, in all the models were very low in real terms, they were in all but two cases statistically significant. In the indirect effects model, the consistency of the effects of Attachment on these three intervening variables caused the magnitude of the Attachment-Participation relationship to double in size and to become statistically significant at the .05 level.

The above findings conformed to the hypothesis that was established in the study for the Attachment variable and was congruent with the beliefs of many school officials in Newfoundland about the effects of this phenomenon. Seven of the 20 principals interviewed specifically referred to the problem of young people not wanting to leave home to go to a postsecondary institution. The following are some of their remarks:

> Distance is a problem; we are a small remote community of 200 people. It is a culture shock for students to go to St. John's to

> school; if they have no family or friends, they run into trouble with staying on.
>
> Family and community ties are a problem. The kids don't want to leave home, and when they do, the parents tacitly condone them giving up their efforts at postsecondary education. Parents tend to enshroud their kids in security and need to reproach them more about sticking it out when they're away at school. Instead, the kids are inclined to return home if any problems arise.
>
> The cultural shock of going from a small community to the city is a problem. Kids are pampered too much by parents. They are not independent when they go to a larger centre and become intimidated.
>
> Some kids don't want to leave home; they're attached to the community. There is also a perception among some students that they are unprepared for postsecondary education. They lack confidence in their ability compared to students from the larger centres.

Comments from guidance counsellors paralleled those of the principals. Thirty percent of the counsellors referred to community attachment as a problem for students in their areas and indicated it prevented able students from continuing with their education. Two of the administrators of the public postsecondary institutions in the province referred to the community attachment phenomenon as well. Neither principal elaborated on the issue and was not queried further on it, but they acknowledged that there were many young people in small Newfoundland communities who did not want to leave home to continue their education.

There was some support in the literature for the findings that emerged in this study on the Attachment variable. Both O'Neill (1981) and Looker (1993) theorized that a socialization culture prevailed in small rural communities that actually dissuaded young people from leaving those communities for an extended period to either seek work or to pursue further education. The degree of commitment to the home community through strong family ties, close-knit relationships, family history, security, and friendship networks was believed to be sufficiently strong and pervasive to induce many young people to remain there. These reasons were echoed by many of the educators who were interviewed in this study who felt they equally pertained to the culture of small fishing communities in this province. The Attachment theme requires more research but the potential of this variable as a powerful determinant of educational attainment is already apparent.

Intervening Variables

The general hypothesis formulated for the study was that the selected exogenous variables would be statistically significant determinants of Postsecondary Participation, and further that they would be mediated by a selection of endogenous variables that would cause them to influence Participation indirectly as well as directly. That is, not only would the effects of the respective source variables be directly associated with the dependent variable, the effects would also be transmitted through the hypothesized endogenous variables and would affect the variance of the dependent variable indirectly. It was further hypothesized that the total effects of the exogenous variables would be greater than the direct effects.

Indirect effects analyses revealed that in all but three instances the total effects of the statistically significant exogenous variables on Postsecondary Participation were greater than the direct effects. (See Table 5.18.) The relative influence on Participation of the variables Guidance and Regions 2 and 3 was reduced through the application of indirect effects analysis. The size of the beta coefficients for total effects of the other variables was larger than for the direct effects, thereby supporting the alternative hypothesis for total effects and the mediating hypothesis for the endogenous variables.

In statistical terms, the amount of variance in the dependent variable contributed directly by each source or exogenous variable was increased when the variance in the endogenous variables attributable to the same source variables was added to the direct effects. For example, the size of the total effects coefficient for the Value of Education variable on Participation was 62% higher than the size of the direct effects coefficient. The increased effects meant that the indirect effects of the intervening variables mediated 62% of the total effects of the Value of Education on Participation. This meant that not only were the respondents who came from families where education was highly esteemed more likely to continue their education after high school, simply because of the influences of the value of education itself on participation, but the likelihood was increased because of the effects that a high value on education in the home had on other potentially contributing variables such as Academic

Achievement, Academic Attainment, Significant Others, and Vocational Self-concept.

Additionally, the perceived barriers to going on to further education were diminished because of the supportive effects given by the family members through their high regard for education. In the reduced models for males and females, the regression coefficients for Value of Education on those same endogenous variables--Academic Achievement, Academic Attainment, Significant Others, Vocational Self-concept and Barriers--were already shown to have statistically significant effects on them. The findings of the indirect effects enhancement on Postsecondary Participation lends further support to the general mediating effects hypothesis.

Another example of the influence of the indirect effects on Participation was the Advanced Mathematics variable. The size of the beta coefficient for the total effect of Advanced Mathematics on Participation was more than twice the size of the coefficient from the direct effects. The indirect effects were generated from the relative effects of Advanced Mathematics on Academic Achievement, primarily, but also from its influence on Academic Attainment, Vocational Self-concept, and Barriers. This meant that having taken advanced mathematics in grade 12 exerted two effects on the criterion variable. It influenced Participation directly and it enhanced the collective effects of the four intervening variables on Participation. While the magnitude of the Advanced Mathematics-Participation relationship was doubled, its real effects were very small. Even with the additional effects from the intervening variables, the effects of Advanced Mathematics would have to increase seven times for a positive shift to occur from non-participation to participation.

The indirect findings were congruent with the performance of Advanced Mathematics on Academic Achievement in the reduced models for males and females. In those models, Advanced Mathematics was shown to have had the single biggest effect on Academic Achievement. In the extended integrated model, it was shown that Academic Achievement was the best determinant of Postsecondary Participation of all the variables in the equation. It was not surprising that the effects on Participation of Advanced Mathematics were also transmitted through the endogenous variables, especially through Academic Achievement.

The intervening variable shown to be the best predictor of Participation was high school average, the variable used to measure Academic Achievement. High school average related to the average marks obtained in the provincial public examinations on a selection of grade 12 courses. It was hypothesized that the higher one's overall average, the greater would be the possibility that respondents would continue their education following high school graduation. The resulting correlation and regression coefficients between Academic Achievement and Participation in the three models supported the hypothesis. Both males and females with high averages were more likely to continue their education, but females were shown to have a slightly greater probability than males of doing so. In the extended integrated model, when all the other independent variables in the equation were controlled or held constant, high school average was shown to be the best determinant of Participation in Postsecondary Education, a finding that had strong support in both the empirical and theoretical literature. (See Carpenter & Western, 1984; Elsworth & Day, 1983; Williams, 1987; Clifton et al., 1990, 1991.)

The variable, high school graduation or Academic Attainment, was shown to be a relatively strong predictor of Postsecondary Participation. It was fourth in terms of magnitude of effects on Participation. The direction of the coefficient was positive which supported the proposition that high school graduates were more likely to continue with their education than non-graduates. The finding was not unexpected since high school graduation is virtually a universal requirement for admission to university and technical colleges.

The variables, Vocational Self-concept and Significant Others, were shown to have negligible influence on Participation. The regression and correlation coefficients showed that by themselves, these two intervening variables had minimal or no effect on respondents' entry to postsecondary education. Any influence they did have was exercised indirectly. For example, in the indirect effects analysis, the effects of Well-being on Participation increased by 20%. Part of this increase was due to the mediating effects of the Vocational Self-concept variable. In other words, the contribution that Vocational Self-concept made to Participation was through increasing the effects of Well-being on

Participation. And in real terms, the 20% increase in the effects of Well-being was itself very small.

A strong but inverse relationship, compared to the other independent variables, was shown to exist between the Barriers variable and Postsecondary Participation. The beta coefficient in the extended integrated model was second to high school average in the relative size of its effect on the dependent variable. It can be concluded from the negative relationship that the more that barriers were perceived by respondents to exist, the greater was the probability the respondents would not go on to postsecondary education following high school graduation. The relatively strong negative relationship between Barriers and Participation persisted in all three extended models in the regression analyses.

Exogenous variables found to have small but statistically significant effects as barriers in the male sample were Family Size and Attachment. In the female sample, statistically significant barriers were shown to be Family Size, Attachment, and Regions 3 and 4. In the reduced integrated model, barriers that were statistically significant as inhibitors to Participation included Family Size, Attachment, and Region 4. In all three samples, the common barriers that were statistically significant were Family Size and Attachment.

An anomaly is apparent between males and females in the effects of the Barriers variable on Participation. In the extended model for males and females, the correlation coefficients between Barriers and Participation suggested that while both sexes perceived the barriers as a problem in continuing their education, males saw them to be slightly more insurmountable to their participation than did females. The negative relationship between Gender and Barriers in the integrated reduced model supported this proposition. The reason for the anomaly is unknown. A speculation is that females outperformed males academically. Females had a higher grade 12 average than did males and average, or Academic Achievement, was shown to be the single biggest determinant of entry to postsecondary education. Because of their better academic performance in high school, females might have more confidence than males of coping with postsecondary academics and were more likely to attend.

When the Barriers variable was regressed on the source variables in the reduced models, its effects were shown to be diminished by the presence of certain other variables. For example, variables which had been shown to negate the effects of barriers on males to going on to further education were Rural/Urban, Learning Style, Value of Education, and Advanced Mathematics. Similar effects in the reduced female model were estimated for the variables, Learning Style, Career Plans, Advanced Mathematics, Well-being and Value of Education.

All five variables were negatively associated with Barriers. That is, if females came from homes where education was valued, if they possessed a continuing sense of general well-being, if they had taken advanced mathematics in high school, if their favourite way of learning was independent study, and if their career plans were focused, the barriers to continuing their education that did exist for them were perceived not to be too restrictive and severe. In reality, the barriers for these young women were less likely to prevent them from participating in higher education than they were likely to do for young women who did not experience the phenomena of advanced mathematics, independent study preference, and so on. In other words, young females experiencing these five influences were less likely to consider the barriers as severe as did females who did not experience such influences. Corresponding conclusions would apply for the barriers identified in the reduced models for the male sample.

In general, the more an independent learning style was favoured, the less was learning or being able to learn in postsecondary education perceived as a barrier to males and females. The more developed or focused the career plans, the lower was "not knowing what to do" a perceived barrier for females to going on. For both males and females, students who had taken advanced mathematics in high school were less likely to consider mathematics problematic in postsecondary education. And, if education were highly esteemed in the home, there was less likelihood that young people would not obtain a higher education because they saw it to be of little value per se. The opposite would be more likely. That is, they would attend because they would see higher education to be important to them.

The question of barriers was raised in the interview protocols with former students, high school principals, guidance counsellors, and with principals of postsecondary institutions. The one area of common agreement among these stakeholders was that lack of finances was a significant inhibitor to young people in continuing on to postsecondary education after they graduated from high school.

Financial constraints, however, were not identified by the former students as the major reason they did not go on to further education immediately after high school. It was a concern for 25% of them but other reasons included personal factors such as having their own child to care for, not having the academic prerequisites for the program they wanted, not wanting to leave home, idiosyncratic reasons such as not having an interest in further education, not knowing what they wanted to do in life, and simply having no reason at all. Five of the 17 young people who had obtained a job after school ended in June, 1989, said they did not want to quit their job in order to continue with schooling. Of the nine respondents who had no specific career in mind by the time they graduated from grade 12, six indicated that not knowing what they wanted to study prevented them from applying to a postsecondary school. When they were asked if there were current obstacles to their going, 55% said yes, but that many of the barriers could be overcome. Finding the money to go was the biggest problem, and getting accepted into a program was a second major concern.

Principals identified cost and obtaining finances as the biggest barriers the young people faced when going on to further education. Sixty percent of them said finances kept most of the students from attending. Reference was made by 25% of the principals to the problems associated with the student loan program, and that if it were improved, many more youth would be inclined to enroll in postsecondary education. The perception among 35% of the principals was that many young people did not want to leave home to go to school and were thus disadvantaged compared to young people in the larger centres where the postsecondary institutions were located. The remarks made by two of the high school principals from schools more than 500 km. apart revealed the common barriers that were thought to generally apply throughout the province. One identified

> lack of appropriate role models, and the UI syndrome. The Canada Student Loan Program is a barrier; there is too much bother with it, especially with appeals. It causes trouble for the kids and discourages them from even applying. Distance to a postsecondary institution is a problem too; kids do not want to leave home to go. They will leave home to work for 20 weeks to get UI but not for postsecondary education. Many kids lack the proper academic qualifications. Finally, the family is a negative influence and there are few siblings who go on to postsecondary education before them.

The other principal said

> finances may be a problem for some; personal reasons inhibit others. For example, there is a noticeable segmentation among social groups in this area which is more pronounced than in other communities; 25% of the population are either working poor, single parents, or welfare recipients. Some students do not have the prerequisites to qualify for some programs even though they have grade 12. And then there are barriers from within; kids think they should know what they want to do. Distance is only a factor in terms of cost, not in terms of being away from the family or community; university courses are now being offered at community colleges in the area [thereby] providing access to postsecondary education.

Guidance counsellors identified psychological factors and family ethos as the primary barriers to participation, after finances. Financial reasons were cited by 70% of them as the main cause, lending support to the views of the young people themselves and to the high school principals on this factor. Lack of motivation among the students and in the family was considered significant by 60% of the counsellors. Negative family influences and the generally discouraging employment prospects in Newfoundland were said to keep many students from going. The remarks by one counsellor reflected the comments of many of them about specific barriers to participation:

> lack of motivation or ambition; no career direction. Kids get a lot of occupational information but they are not willing to make the effort to succeed. There is a high drop-out rate in the area, and there is no self-pride or self-esteem among the students. The family is a problem, and so are economics; there is no job necessarily at the end of the effort. Student loans are insufficient and summer jobs are not even adequate.

Another counsellor expressed a range of views which were particularly directed at the family, but were meaningful in their reference to postsecondary institutions and to the program access problem identified by some of the young people during their interviews. The counsellors' comments referred to

> low family encouragement; fear of the unknown (uncertainty of the future, of no job at the end of the period of study); kids don't want to borrow money to go to postsecondary education; low importance of education among families; they think the government will provide; Many homes have double UI incomes, there is no need to work hard, and the kids realize this too. Finances are a problem, access to courses and programs are a problem; many courses are not event provided in Newfoundland, e.g., broadcasting, veterinary medicine, and there are no courses for the middle

> kids. ----- college offers the same courses now that they did 20 years ago.

Postsecondary educators who were interviewed cited many of the barriers that were mentioned in interviews by the other stakeholders. Nearly half of them referred to the financial impediments and to the program access problem. Reference to the access issue focused as much on the young people lacking the academic prerequisites to meet the program requirements as to the shortage of available spaces in the institutions. Three administrators acknowledged there was limited access to programs in some areas of the province and that some popular courses and programs had long waiting lists. One said "the quota system is a problem as is the first-come, first-serve policy. . . . There is a limit on class size, for example, shop courses are limited by safety considerations." Another administrator made reference to the ambivalence which many young people were experiencing about education. "Youth are losing their sense of value for higher education; they see educated people without jobs, yet, they also see how little they can do with a low level of education." Lack of counselling and career information was highlighted by four administrators as a barrier to young people. "Students have no direction to their lives, they lack a sound knowledge base about occupations and careers, and are ignorant of how to go about gaining entrance to postsecondary education." One administrator who recognized that some personal constraints to education did exist made the following reply to the barriers question:

> It's difficult to see why they wouldn't go if they wanted to--student loans are available although the student loans program needs revising. However, it was never meant to be more than a supplementary source of financing. There is a cultural problem in that education is not valued in some areas, especially in parts of rural Newfoundland; education is not promoted in the home. In periods of high unemployment, educated people often cannot get a job, reinforcing the belief that education is not a panacea.

In general, data from the stakeholder interviews provided empirical support on the nature of the barriers to postsecondary participation. The kinds of barriers that were perceived by the YTLM survey respondents to exist, and which prevented some of them from continuing on to postsecondary education after high school, were also perceived to exist by high school principals, guidance counsellors, and administrators of postsecondary institutions. Some of the variables identified in the regression analyses as barriers were similarly identified by the stakeholders as barriers, a comparison which lent credence in a substantive way to the real presence of such barriers. The stakeholders amplified both the nature of the barriers and the extent to which the barriers existed for many young people as an obstacle to obtaining higher education.

Summary

This chapter discussed the findings of the regression and path analyses that were carried out to measure the effects of the independent variables on Participation in Postsecondary Education. Discussion followed along the lines of the linear relationships of the variables that were hypothesized in the conceptual framework shown in Figure 1.1. In real terms, all of the effects were generally very small. In relative terms, the most powerful determinants of Participation were Academic Achievement, Barriers, Value of Education, Advanced Mathematics, Academic Attainment, and Well-being. A powerful deterrent to Participation was the extent to which financial constraints on young people inhibited their entry into college or university even though most of those youth who were interviewed said lack of money was not the primary reason they did not attend the year they graduated. Data from the series of interviews that were conducted with students, high school principals, guidance counsellors, and administrators of postsecondary institutions in Newfoundland generally supported the findings of the quantitative analysis and added a contextual dimension to the effects of many of the hypothesized independent variables. Most of the hypotheses formulated for the study were supported by the results. Although the differences in the correlation and regression coefficients were very small, the results were generally consistent with the theoretical perspectives for the variables found in the educational attainment literature.

Chapter 7

Summary, Conclusions, and Implications

Introduction

The purpose of this chapter is to summarize the major findings and conclusions, to identify implications for educational administration, and to suggest areas for further study. A brief review is given of each major part of the research beginning with the purpose and framework and concluding with the results of the analyses. The conclusions are structured according to the research questions with the subsidiary questions first being examined. The contribution of the indirect effects of the background variables on Participation is briefly examined and reference is made to their effects on the intervening variables, which was related to the ancillary research question. General reference is made to the similarities and differences between the study's findings and findings from previous research. Several implications of the results for educational administration in general are identified and particular reference is made to potential school and policy responses for the improvement of postsecondary participation in Newfoundland. Recommendations on future research into postsecondary participation are integrated into the discussion on implications.

Summary

Purpose and Framework

The study had two major purposes: (1) to identify an inventory of variables that were believed to influence participation in postsecondary education in Newfoundland, and (2) to examine those variables to determine the nature and degree of their effects on participation. The independent variables, 17 in all, were grouped into five categories. All the study variables were as follows:

Personal Variables
- Gender
- Career Plans
- Well-being
- Learning Style

Family Variables
- Value of Education in the Family
- Family Size (number of siblings)

School Variables
- Guidance
- Career Information
- Mathematics Program

Community Variables
- Geographical Region
- Rurality (Rural/Urban)
- Attachment

Intervening Variables
- Academic Achievement
- Academic Attainment
- Vocational Self-concept
- Significant Others
- Barriers

Dependent Variable
- Postsecondary Participation

The five intervening variables were considered to mediate the effects of the background variables on Participation. That is, the respective personal, family, school, and community variables were expected to exert both a direct effect on Participation and an indirect effect through their influence on each of the intervening variables which in turn would exert their own singular influence on Participation.

One main research question focused the study, namely, the inventory of environmental and student background variables considered to be associated with enrollment by Newfoundland youth in a postsecondary educational institution. Five subsidiary questions that embodied the independent variables helped to guide the study. One ancillary question was posed to examine whether differences existed between males and females in the effects of the background variables on the intervening variables. A theoretical model was adopted to graphically describe the hypothesized process of effects of the independent variables on the dependent variable. The model is replicated in Figure 7.1. Research into postsecondary participation in Newfoundland was considered an appropriate and necessary area of study because the province has consistently had one of the lowest participation rates in Canada. A telephone survey among postsecondary administrators in Newfoundland confirmed a need to study participation in the province and to examine various student background and environmental variables that they believed were related to it.

Review of Literature

The literature on Postsecondary Participation was found to be incorporated into research on educational attainment which itself was shown to have stemmed from sociological research into status attainment. The concept of status attainment refers to the various statuses related to education, occupation, self-concept or to some other status that subjects under study have attained. These statuses are linked to social background and to the personal achievements of the study subjects. (See Williams, 1987.) The origin of the status attainment tradition was shown to be associated with two studies in the United States, namely, a national study on social mobility (Blau & Duncan, 1967) and a student

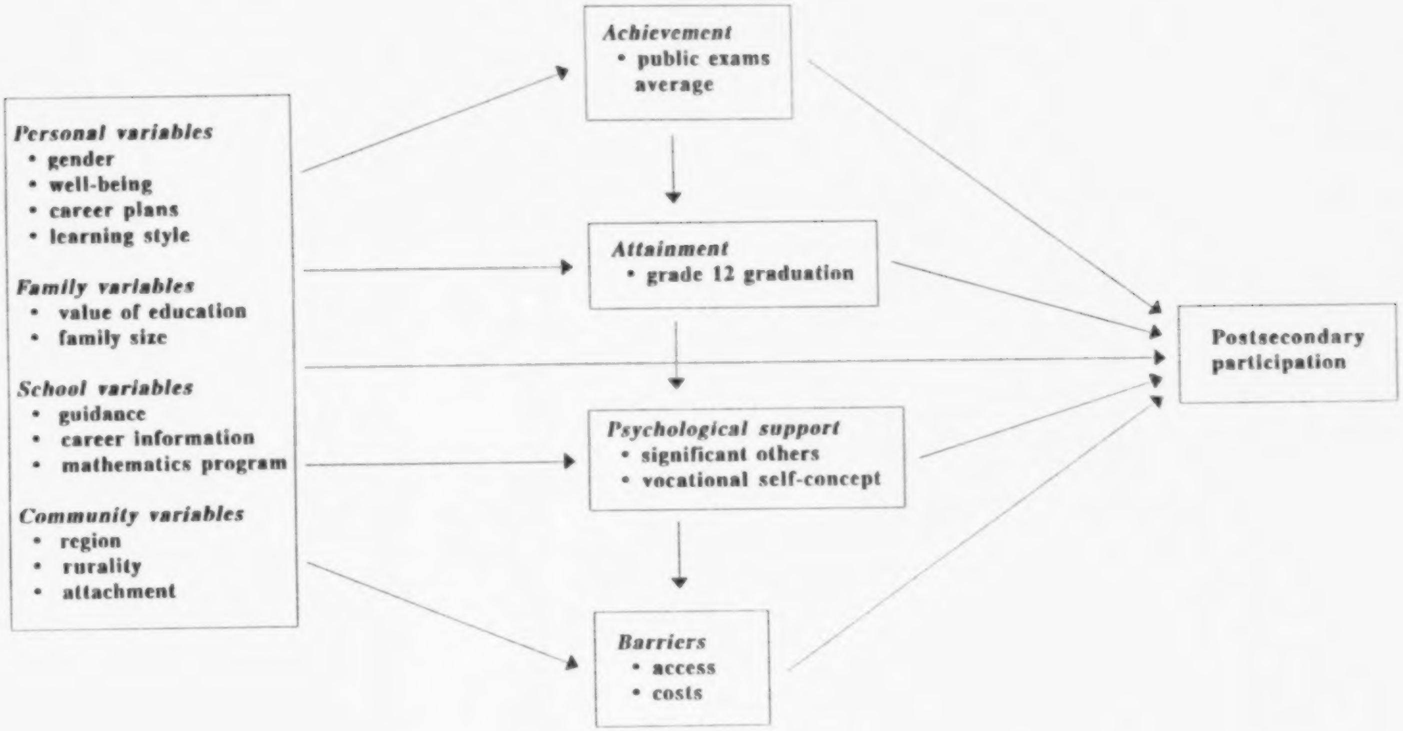

Personal variables
• gender
• well-being
• career plans
• learning style
Family variables
• value of education
• family size
School variables
• guidance
• career information
• mathematics program
Community variables
• region
• rurality
• attachment
Achievement
• public exams average
Attainment
• grade 12 graduation
Psychological support
• significant others
• vocational self-concept
Barriers
• access
• costs
Postsecondary participation

Figure 7.1 Theoretical Model of Postsecondary Participation

Source: A derivative of models developed by Williams (1987) and Clifton, Williams, and Clancy (1990)

mobility study in the state of Wisconsin (Sewell & Shah, 1967). Subsequent research into both status attainment and educational attainment was patterned on the conceptual framework developed for these two studies. Research on educational attainment in North America, Australia, and Europe built on the theory that social origin or family background variables directly influenced the educational attainment of the subjects under study. Further, the theory advocated that any number of social psychological variables could intervene to mediate the effects of the background variables on the dependent variable(s). The background variables were considered to exert both direct and indirect effects on educational attainment. Typical sources of data in educational attainment research were shown to be longitudinal in nature and the data were usually obtained by national, regional, or local surveys. Educational attainment research in Canada was shown to be less extensive than similar research conducted elsewhere but it was nonetheless patterned in nature and scope on contemporary models. The review of the literature provided both theoretical and empirical support for the 17 independent variables selected for the study and for the theoretical framework that was adopted to guide the analyses.

Research Method

The study was both quantitative and qualitative in nature in that the data from the survey instruments were complemented with data from a series of stakeholder interviews. The primary sources of numerical data were two surveys from the longitudinal, Youth Transition into the Labour Market study (YTLM) in Newfoundland. Data from the instruments used in the original survey, survey 1, and from the first major follow-up, survey 3, of the Level 111 cohort undertaken in May, 1989, and in January, 1991, were supplemented with numerical data from the provincial public examination files at the Department of Education to quantitatively measure the effects of the 17 independent variables on Postsecondary Participation.

The instrument used in the first survey was a 22-page questionnaire containing 76 questions under three sections:

Section A	Background Information
Section B	Career Plans
Section C	Work Attitudes and Knowledge

The third survey instrument was a 14-page questionnaire containing 35 questions that were organized under six sections:

Section A	What Have You Been Doing Over The Past Year (1990)?
Section B	What Are Your Plans For This Year (1991)?
Section C	Where Do You Expect To Be In Five Years?
Section D	What Progress Did You Make On Your Career In 1990?
Section E	What Was Your Experience As A Worker During 1990?
Section F	What Was Your Formal Education And Training As A Student During 1990?

Data from the Department of Education were selected from the public examination data base to provide information on two intervening variables, namely, Academic Achievement and Academic Attainment. Data pertaining to average marks on a selection of grade 12 courses were selected to measure achievement and data on grade 12 graduation were selected for attainment.

Validity and reliability measures were established for the instrument items. Because the initial Level 111 cohort survey had been validated by a field test by the YTLM researchers and because the style and format of the questions on the third survey were similar to those in the first survey, it was not considered necessary to conduct tests to validate the items that were singled out for the present Participation study. Lower bound reliability measures were calculated on relevant subjective items from the two surveys by using the general form of the Spearman-Brown Prophesy Formula which is related to Cronbach's Alpha and which estimates test reliability from a single test administration rather than a test/re-test procedure. Reliability coefficients estimated for the selected items ranged from low to high.

The second sources of data were a pilot study conducted at the University of Alberta and a series of interviews conducted in Newfoundland. The pilot study was part of the preliminary preparations for establishing the parameters of the main study. A brief questionnaire was administered in the winter, 1991 to 95 undergraduate and graduate students in the Faculty of Education that asked for their views on problems they believed were associated with young people pursuing higher education. Results of the pilot study contributed to the initial selection of the independent variables in the Participation study. The series of interviews were conducted by telephone and in-person with a random selection of 20 subjects from the Level 111 YTLM cohort, a random selection of 20 high school principals and 10 guidance counsellors from the K-12 system in the province, and a purposive selection of 13 administrators from the provincial postsecondary education system. Questions asked of the interview subjects generally corresponded with the research questions set for the study.

The data used in the study were organized and analyzed using factor analysis, multiple regression, and path analysis. Separate analyses were conducted for males, females, and for a total group model.

Analysis of the Linear Composites

Nine of the independent variables used in the study were linear composites. These were variables that were not discrete such as gender, rural/urban, region, or high school average. Rather, they were more nebulous in their composition and consisted of items that were believed to be representative of the respective concepts. The composites were Career Plans, Attachment to Home and Community, Value of Education in the Family, Guidance, Career Information, Well-being, Vocational Self-concept, the Influence of Significant Others, and Barriers to Participation. Each was constructed using a form of factor analysis called principal components analysis. The data contained a number of items that appeared to be valid indicators of these nine concepts. The items were extracted from the YTLM questionnaires and when subjected to principal components analysis, each set of composite indicators was collapsed and the best linear composite selected. A standardized score and reliability coefficient were calculated for each composite.

Analysis of the Data

Correlation and regression coefficients were reported for three models: a male, female, and total group model. In all three models, the parameters were estimated in accordance with the research questions developed for the study.

Results from the quantitative data showed that 6 of the 17 independent variables consistently appeared in the various analytical models to be most highly related, statistically, to Postsecondary Participation. Three of these were background variables, namely, Value of Education, Advanced Mathematics, and Well-being, and three were intervening variables, namely, Academic Achievement, Barriers, and Academic Attainment. In order of size of effects, Academic Achievement had the highest effects followed by Barriers, Value of Education, Advanced Mathematics, Academic Attainment, and Well-being. In real terms, their separate effects on Participation were very small and would have to increase approximately 10 times in order for a non-participant in postsecondary education to become a participant.

Results from the interviews with various stakeholders in the province supported the findings from the quantitative analyses. Ten of the independent variables used in the study were discussed with subjects in the interview series. Responses by those who were interviewed gave added weight to the influences on Participation of the variables highlighted by the regression and path analyses.

Generally, the hypotheses formulated for the study were supported by the findings even though these findings were small. In turn, the results conformed to the theory relating to the variables that had been discussed in the literature.

Conclusions

Five subsidiary research questions guided the study and provided a framework for the analysis of the data in order to answer the primary research question. The conclusions of the study are presented in accordance with the order of the subsidiary questions.

> **1. To what extent are personal variables associated with Participation in Postsecondary Education?** (Personal variables were Gender, Career Plans, Well-being, and Learning Style.)

The correlational, regression, and path analyses showed all four personal variables to be statistically significant predictors of Postsecondary Participation. The effects of Well-being were higher than the effects of the other three variables. The coefficients for Learning Style were not statistically significant in any of the regression models except in the path analysis where its effects on Participation were half that shown for Well-being.

The direction of the effects of Gender, Plans, and Learning Style was as hypothesized but the real effects were so low that it is speculative to say that they actually support the hypotheses. Gender was regarded in the status attainment literature as an asset, usually for males, and was treated in this study as an asset for females because the postsecondary enrollment figures in recent years in Canada have favoured females. (See Table 1.1, Chapter 1.) But, the small effects of Gender on Participation in the subsequent analyses, while ever so slightly favouring females, cannot be regarded as confirmatory results. In effect, males were just as likely as females to go to postsecondary education, other things being equal.

Career or Educational Plans were treated in the study as a background variable which was contrary to its placement in other studies. Usually, Plans were examined as an intervening variable or as the criterion variable. No research was found that actually assessed its effects as a background variable on Participation. In nearly all the studies examined, the theory was that the presence of a plan to continue with further education was a good predictor of actual enrollment although there were some dissenting views found. (See Carpenter et al., 1980 and Alexander & Cook, 1979.) The results in this study of the effects of Career Plans on Participation lent support to both sides of the argument. That is, the results tend to support the theory that a plan is beneficial but they were not so strong as to be unequivocal about it.

Learning Style had been treated as a hypothetical variable. There was no direct evidence from the literature that it affected Participation because no research related to it had been found. Theoretical support for the concept came from O'Neill (1981) who had said that university and technical education were associated more with theoretical and abstract conceptions than with hands-on or practical learning. The variable was included in the study because it was present in the data. While the results were in the direction of the hypothesis, they were inconclusive. To say that a preference for independent learning in high school is predictive of eventual entry into postsecondary education would be provisional at best.

As with Learning Style, the variable, Well-being, was not found to have been examined in any of the status or educational attainment studies. Empirical research focused on the effects of stress and anxiety on rational decision-making among young people. The theory was that the less anxiety youth experienced, the more likely it was they would make rational decisions about specific life situations such as their careers. The results of this study showed that a continuing sense of general well-being tended to favour participation in postsecondary education for both males and females. The effects were slightly stronger for females. However, more research would be needed to confirm these findings before generalizations could be made about the influence of well-being on participation. One contribution that this study made to the educational attainment literature, however, was that Well-being was examined for the first known time as a predictor of Postsecondary Participation and while the real effects were shown to be very small, they were statistically significant and in the direction that was hypothesized. The potential for further study of this variable on educational attainment would seem to be favourable.

A short answer to the first subsidiary research question is that none of the effects of the personal variables was strongly associated with participation in postsecondary education. The effects of Well-being were higher than the effects of Gender, Career Plans, and Learning Style, but not to the extent where it could be generalized that a continuing sense of well-being is predictive of entry into postsecondary education.

> **2. To what extent do family variables influence Participation in Postsecondary Education?** (Family variables were Family Size or the number of children in the family, and Value of Education, i.e., the value held for education in the home.)

The analyses showed that Family Size had very little or no effect on Postsecondary Participation. It was statistically significant in all the analyses, and its negative coefficients conformed to the theory discussed in the literature. That is, large families militated against entry by their children into higher education. Consequently, the hypothesis in this study for family size was that young Newfoundlanders who came from large families would be less likely to enter postsecondary education because fewer family resources would be available to them to do so. The findings did not support the hypothesis probably because the respondents in the study did not come from overly large families. The mean number of children was 2.8. This number is low for traditional Newfoundland families but is comparable to the trend towards smaller families that has been the pattern in Canada for the last 25 years (Statistics Canada, 1992, p. 74). While Family Size had been identified in the reduced integrated model as a Barrier to Postsecondary Participation, its effects in the full model were too small by themselves to act as an impediment to enrollment.

The Value of Education variable, on the other hand, had the third highest effect on Participation of all the other variables, next to Academic Achievement and Barriers. The results supported the hypothesis that the more a family valued education, the more probable it was that children in the family would attend postsecondary education. Value of Education was a proxy for parental encouragement which was how previous studies treated this variable. Encouragement in the survey data was in the form of whether respondents thought their parents wanted them to continue their education after high school, whether parents were prepared to help their children bear the costs of higher education, and whether the children's educational plans were talked about in the home. The literature supported these concepts which were discussed under the rubric of traditionalist functionalist theory and cultural capital theory. (See Collins, 1979 and Bourdieu, 1977a.) The former referred to family financial resources and the latter to family cultural resources.

Whereas the results of the analyses on Value of Education conformed to those found in previous research and to the expectation set for it in the study, the application of the finding regarding Participation by itself is limited. Many families could value education and encourage their children to attend college and university, but the children would still not attend because the family could not provide any financial assistance that would enable them to do so. What perhaps can best be concluded from the results is that an absence of parental encouragement, which could stem from a lack of value for education, would more easily translate into non-participation by their children in postsecondary education. However, high esteem for education in the family does not necessarily ensure that children will enter higher education. Other reasons such as lack of money by the parents could impede them from attending, as many of the young people pointed out during the interviews.

During the series of interviews, a minority of postsecondary administrators and high school principals, but a majority of guidance counsellors, expressed firm opinions that many parents in Newfoundland held a low value for education. They said that such a parental attitude detracted many students from finishing high school and going on to university or a technical college. In their view, parents were instrumental in determining educational outcomes for their children. Unless a change in attitude occurred among some of the parents who had little regard for education, the educators held out little hope that children from these homes would ever graduate from high school and go on to further education.

The extent then to which family variables influenced participation in postsecondary education was contingent on the value held for education in the home. Family size had little effect, but the Value of Education variable had the third highest effect on Participation of all the independent variables in the study.

3. To what extent are school variables related to Participation in Postsecondary Education? (School variables were Guidance, Career Information, and Advanced Mathematics.)

The lack of influence of Guidance on Participation in the quantitative analyses was unexpected. Initial findings from the pilot study and the interviews with postsecondary administrators gave sufficient support to the importance of guidance services in the secondary system to anticipate results that would favour participation in postsecondary education. But, the correlation between Guidance and Participation was virtually zero, .001, and the regression and path analyses showed the Guidance variable to have almost no effect on Participation. Only in the full model were the direct effects statistically significant, but this significance was lost when the indirect effects were applied.

The insignificance, in real terms, of the Guidance variable on Participation may be partly explained from comments made during the student interviews. Most of the students said there was a counsellor in their school, either full or part-time, but most said they did not approach the counsellor about their career or educational plans. While they said the counsellors generally encouraged students in class to continue with their education after high school, there was a clear perception among the youth that the counsellor could be of little help to them in their own particular case. They cited their teachers as more important in giving personal career advice because teachers knew the students better. This perceived lack of helpfulness of counsellors could explain the low results from the quantitative analyses.

The influence of Career Information and Advanced Mathematics on Participation was positive even though the effects were small. Both independent variables were statistically significant in the three regression models and while the coefficients were very low in real terms, they were much higher than the relative effects of all the other independent variables in the models. The findings supported the hypotheses set for these variables and were similar to findings in the other studies referred to in Chapter 2 that reported career information and higher mathematics as being positively related to participation. Strong support was also given by principals and guidance counsellors in the interviews to the potency of Advanced Mathematics as a precursor to Participation. They said the course helped to prepare students better for the academic demands of postsecondary education.

The strength of the effects of Career Information on Participation could probably have been enhanced if more students had had more exposure to information on the various non-university institutions in Newfoundland. The frequency distributions showed that the percentage of students who had heard a speaker from or read information about postsecondary institutions other than the university ranged from 11% to 41%. This meant that when the respondents were in high school, nearly 60% of them had not been exposed to information about the majority of the community colleges and technical schools in the province. Had they been, the findings on the Career Information variable might have been less truncated.

A similar conclusion can be made about the Advanced Mathematics variable. While the Advanced Mathematics course was available in most of the high schools in the province during the 1991-92 school year--90% of the principals interviewed said the course was offered in their schools--only 18% of grade 12 students were enrolled in the course. This compares with 16%

enrollment in the 1988-89 school year when the Level III cohort was first surveyed. In that year, slightly more females than males, less than 1%, enrolled in the course. Some of the principals confirmed that students opt for the easier Academic Mathematics course because they find it less onerous and they avoid the risk of a possible low mark in Advanced Mathematics which would bring their overall average down. However, students who were enrolled in Advanced Mathematics were said by the principals and guidance counsellors to be generally oriented towards postsecondary education.

Generally, the information obtained relevant to research question 3 is that the school variables on average were moderately related to participation in postsecondary education. Guidance had a negligible influence and Career Information and Advanced Mathematics both had small effects on Participation in the numerical analyses. However, the interview results gave much more support to all three variables in the extent to which they were related to Participation. Advanced Mathematics and Guidance in particular were singled out as having a big effect on participation. Insufficient guidance services were cited by postsecondary administrators, high school principals, and guidance counsellors as an impediment to postsecondary participation whereas Advanced Mathematics was said to be highly associated with participation.

For these two variables, Career Information and Advanced Mathematics, the findings need to be viewed in light of the small extent to which the programs were accessed by students in the study. Reference to the interview data on

Advanced Mathematics in particular would lend more credence to generalizations about the influence of this variable on Postsecondary Participation.

> **4. To what extent do community variables affect Participation in Postsecondary Education?** (Community variables were Rural or Urban community, Region, i.e., geographical region, and Attachment to home and community.)

The results of the analyses for the Rural/Urban variable were unexpected and contrary to the findings of previous research. Educational inequalities and disparities between rural and urban communities were widely reported in the educational attainment literature. (See Chapter 2.) Rural communities were almost always viewed as presenting certain disadvantages to people who live there and lower ratings were generally reported for youth on such factors as motivation, aspiration, participation in higher education, self-concept, and academic achievement. Rurality in this study had a stronger influence on variables such as Advanced Mathematics and barriers, but no real differences appeared in the effects of rurality on Participation in Postsecondary Education. Respondents from a rural community were just as likely to go on to further education as were respondents from an urban community.

A speculation as to why no discrepancy existed in Participation between Rural and Urban communities is that access to postsecondary institutions has become reasonably available from anywhere in the province. Access to community colleges is especially available. In recent years, many of these colleges began offering first year university courses for which students obtain credit when they eventually go to the main campuses. This kind of access may have reduced the need for students in their first year to leave home for extended periods to attend university. Published statistics from the Department of Education show that 25% to 30% of Newfoundland grade 12 graduates in any one year go to university. The growing availability of courses in outlying areas in the province could mean that many more graduates might now be participating in first year university education in their home districts.

The hypothesis for the Region variable was not supported in the study. It had been anticipated that young people from outside the Avalon Peninsula area, Region 1, would be less likely than those from within the region to attend postsecondary education. The findings were low enough to conclude that such a likelihood did not exist. Wilson (1991) had found that Memorial University drew its students largely from Region 1 where the main campus was located but little other evidence was found that explained participation differences by region. Williams (1987) intentionally excluded the variable from the longitudinal study on youth transition in Australia because "region" was viewed as a proxy for many other phenomena that could more appropriately be examined directly. The speculation alluded to above in connection with access might also be applicable to the Region variable in this study as an explanation of why no differences were found in participation between regions.

More support was provided by the interview data than the survey data for the Attachment variable. Principals, guidance counsellors, administrators of postsecondary institutions, and former students all indicated that not wanting to leave home was a factor in not going on to further education. The results of the quantitative analyses, however, provided almost no support for the hypothesis that the higher the level of attachment to home and community, the less likely it would be that respondents would enter postsecondary education. Only in the indirect effects analysis was the Attachment-Participation relationship statistically significant, but the effects were so low that in real terms they meant the negative effects of Attachment would have to increase 40 times for the variable to deter participation in postsecondary education. Despite reasonable support in the literature (O'Neill, 1981; Looker, 1993) for the concept that many young people in rural areas want to remain in the immediate vicinity rather than leave to obtain employment or further education, quantitative support in the study for Attachment was minimal. Qualitative data provided considerably more support, which leaves the question of the effects of Attachment on Participation largely unanswered. Further research on the variable would be needed before a more definitive conclusion could be drawn.

To use only the findings from the statistical analyses would mean addressing the research question by saying that community variables generally had little or no effect on participation in postsecondary education. Results from the interviews, however, indicated that the Attachment variable was highly associated with participation for many students from small communities. Principals, counsellors, postsecondary administrators, and even several youth referred to the inhibiting effects on young people of not wanting to leave home. Their comments were sufficiently frequent and similar in context to say that these respondents regarded community attachment to be influential to a great extent in detracting young people from participating in postsecondary education.

> **5. To what extent do intervening variables mediate the effects of the background variables on Participation in Postsecondary Education?** (Intervening variables were Academic Achievement, Academic Attainment, Vocational Self-concept, Significant Others, and Barriers.)

Generally, the mediating effects of the intervening variables enhanced the effects of the background variables on Participation. Two independent variables that were not statistically significant with Participation in any of the regression models became statistically significant in the indirect effects model, namely, Attachment and Learning Style. While the total effects were small for these two variables, nevertheless the influence was in the direction hypothesized for them. In three cases, the magnitude of the relationship doubled through the indirect effects application. The cases were the Attachment-Participation, Advanced Mathematics-Participation, and Learning Style-Participation relationships. (See Table 5.18.) While the "boosting effects" were not large in substantive terms on any of the three variables, they did add further support to the hypotheses established for the background variables in Chapter 2. That the intervening variables enhanced the effects of the background variables did not mean that the intervening variables themselves had statistically significant effects on Participation. It was true for Academic Achievement, Academic Attainment, and Barriers, but not true for Vocational Self-concept and Significant Others.

The Barriers variable was new to educational attainment research. It had not been examined in any known studies in the literature, but structural barriers were mentioned by Kerckhoff (1976) as important issues in the allocation model that he recommended as an alternative to the ascriptive models that normally guided status attainment research. Kerckhoff advocated for an allocation perspective on attainment in order to identify structural constraints that were externally imposed by existing social engineering mechanisms such as ability groupings, school grading schemes, and program selection criteria. Structural limitations identified in this study that could act to impede participation in postsecondary education were largely financial, or were related to the availability of adequate seats in popular programs or to the admission requirements of postsecondary institutions. In real terms, the effects of the impediments were small. The negative effects of the Barriers composite on Participation would need to increase approximately 11 times before they effectively restrained the respondents from entering higher education. Nevertheless, the findings supported the theoretical perspective of the allocation model advocated by Kerckhoff and in a sense made a new contribution to the educational attainment literature as a composite deserving of further investigation.

The research question can thus be generally addressed by saying that to a small extent, in substantive terms, the intervening variables enhanced the effects of the background variables on Participation. Their contribution primarily lay in the additional support they gave to the hypotheses that were established in the study for the background variables.

Ancillary Question

> **To what extent do the effects of the exogenous variables on the endogenous variables differ between males and females?** (Endogenous variables were the five intervening variables in the study. Exogenous variables were the personal, family, school, and community variables.)

In general, the similarities between males and females were more apparent than the differences in all the analyses that were carried out to address this research question. The size of the effects, while generally small, were comparable for both sexes. Differences between variables that did appear were so small in real terms as to be negligible. The interview data added nothing that was contrary to the numerical findings. Questions were not worded in any of the interview protocols to solicit responses about whether circumstances were different for males or females. And, there was no indication from any of the commentary, by way of gratuitous remarks during discussion of the various issues, that circumstances differed by gender. Had the statistical analyses been completed and the results fully analyzed prior to the interviews being conducted, it would have been possible and desirable to focus on gender differences for some of the interview questions and to purposely isolate some variables, e.g., Advanced Mathematics, Vocational Self-concept, Significant Others, and Barriers, for gender related discussion. But, the sequence of the research did not allow those alternatives. In general, the answer to the ancillary question was that there were no substantial differences between males and females in the effects of the exogenous or background variables on the endogenous or intervening variables.

Main Research Question

> **Which environmental and student background variables in Newfoundland are most frequently associated with enrollment in a postsecondary educational institution?**

In relative terms, the variables found to be most frequently associated with Participation were Academic Achievement, Barriers, Value of Education, Advanced Mathematics, Academic Attainment, and Well-being. These six consistently had the biggest effects in the various analytical models used in the study. Results from the interviews held with various stakeholders supported the findings from the quantitative data and gave added weight to the influences of the variables found to be related to Participation in the regression analyses. In real terms, the influence of the six variables were very small with the relative influence of any one variable not going beyond the 0.17 range for size of effect.

The findings suggest that one needs to be cautious in making any definitive statements about the effects of these six variables on Participation in Postsecondary Education. In each case, the results supported the hypotheses established for the variables and were similar to the findings of other research that had examined the same or comparable variables. Two variables were new to the educational attainment literature, namely, Barriers and Well-being, and their findings have potential for further research on entry to postsecondary education. Because the results were so low in substantive terms, however, it is not possible to say that the real effects were anything but minimal. The effects would have to increase at least 11 to 24 times for any movement to occur from a state of non-participation to participation. In the case of Barriers, the negative effects of financial and access constraints would have to increase 11 times before they would impede participation. Overall, it would seem that further research in Newfoundland on these specific variables is needed in order to substantiate or negate the findings of this study and before any conclusions can be made with certainty about their effects.

The findings have some similarity to those found in the 1974 study on student aspirations in Newfoundland. (See Parsons, 1974.) At that time, the researchers concluded that many students failed to enter postsecondary education because of deprivation due to factors in the social environment. They identified some of those factors to be lack of adequate finances; lack of encouragement; and lack of communication about educational possibilities, course offerings, and entrance requirements to postsecondary institutions. Many of these factors also appeared in this study and were reflected in the variables, Barriers and Value of Education. There seems to be sufficient support for the effects of these variables on Participation that they not be discounted merely because their numerical effects in real terms were so low. The results from the interviews clearly showed that the effects of many of the variables that had been found to be weak in the statistical analyses, e.g., Guidance, Attachment, Career Information, Vocational Self-concept, and Career Plans, were viewed as important factors by the various stakeholders. Thus, it is important for the numerical results to be discussed in context with the interview data and in conjunction with the other independent variables but for caution to be exercised in making generalizations about any of them.

Implications

Three of the variables found to be most influential on Participation are directly manipulable by the K-12 education system. Academic Achievement, Advanced Mathematics, and Academic Attainment are within the schools' institutional policy and program structure to change and modify in order to have more positive effects on the participation of graduates in further education.

The Advanced Mathematics variable is more open to policy change than the other two because it is a clearly defined part of the curriculum and is less intricate and nebulous than are achievement or attainment. Because of the low numbers of high school students in some of the province's rural schools, or perhaps because of a lack of suitably qualified teachers, many schools in the past were unable to accommodate Advanced Mathematics into the school timetable. Attempts were made to alleviate this problem with the introduction of Distance Education in 1988. Since then, rural participation in the first year Advanced Mathematics course through Distance Education has grown from 16% to 34%, and second and third year courses are also being offered (Department of Education statistics). However, throughout all the schools in the province in 1992, only a little over 22% of the Grade 12 students were enrolled in the third year Advanced Mathematics course. While this percentage is double the enrollment six years earlier, it is still quite low considering the course is available in more than 90% of all high schools in Newfoundland. Efforts to encourage greater enrollment in the Advanced Mathematics program are continuing but it might be necessary for a major policy shift to occur at the provincial level to reduce the amount of choice high school students have in the selection of their mathematics program. The linkage between Advanced Mathematics and Postsecondary Participation was evident in this study. If the province is to increase its participation rate, at least to the Canadian average, a clear way to begin is to focus on greater participation in Advanced Mathematics.

Two other variables, namely, Value of Education and Barriers, are less within the control of schools but not outside their sphere of influence. Schools experience varying degrees of contact with parents but generally know the family situations of their students well, even in urban communities. The Value of Education variable was consistently shown to be related to Participation and to have statistically significant effects on the intervening variables. Professional school personnel such as teachers, principals, counsellors, and others have an opportunity to enhance the esteem held for education in families where esteem is known to be low. Information obtained in the interviews clearly disclosed that many educators felt that some parents from their area placed a low value on education. This resulted in children from these families neither completing high school nor continuing with their education if they did graduate.

The issue of participation in education generally has become more important in recent years because of the general economic restructuring that has occurred in industrialized countries where traditional sources of work have largely disappeared. There was a time in Newfoundland when many people could be self-sufficient with a modest income. Options such as fishing, hunting, gardening, raising a few domestic cattle, wood-cutting, building their own homes and carrying out their own maintenance could substitute for hard currency. Seasonal work in the Newfoundland construction industry, fishing, forestry, or mining industries, or in a metropolitan area on the mainland enabled many of them to earn a reasonable living without long-term work. In the last decade, however, high unemployment in these traditional industries, combined with decreasing employment opportunities elsewhere in Canada, has left many Newfoundlanders without the traditional means of earning a living. The problem has been exacerbated in the past year with the virtual closing of the fishing industry in many parts of the province, a moratorium that is likely to continue for many years. Government has responded to the fishery crisis by promoting re-training of fishermen in other occupations as a means of helping them gain employment in other ways.

For Newfoundland's youth, the future seems bleak that many of them will ever earn a livelihood in the traditional way. The options for employment will be limited even with an education, but the conventional wisdom is that they, as youth everywhere in the industrialized world, will have no chance at all to compete for better-paying jobs without some formal education beyond high school. So, where a Newfoundland family could once afford to hold a low value for education, such an attitude is now untenable given the economic circumstances in the province. The Royal Commission on Employment and Unemployment (1986) recommended that education be viewed as one of the main instruments for cultivating personal economic independence and self-reliance, and it highlighted the strategic importance of the role of education in the economic rejuvenation of Newfoundland's rural communities. The province's current strategic economic development plan also views educational activity as important and considers the employment future for Newfoundland's youth to be closely tied to their level of educational attainment.

The Value of Education variable, however, is in need of much more research than has been devoted to it. Examples abound of youth from "good" families who finished high school, did well academically while they were there, were encouraged if not implored by their parents to continue their education, and had brothers or sisters who had gone on to postsecondary education, but who opted not to attend after they, themselves, graduated. Research is not known to have been conducted on why such anomalies occur in families where education is demonstrably highly valued. Until it is, the variable will not be as rich a source of information for educational attainment theory as it could otherwise be.

The results of the quantitative and qualitative analyses showed that financial constraints prevented many eligible high school graduates from enrolling in postsecondary education. However, it was not identified by the students who were interviewed as the main reason they did not attend following high school graduation. The Canada Student Loan Program is widely acknowledged to be in serious need of revision to adjust to current cost levels of higher education. Yet, little research has been conducted in Newfoundland and little information is available on the real consequences to postsecondary participation of the current inadequate student loan program. One of the postsecondary administrators was cited in Chapter 6 as saying that the loan program was never meant to be other than a supplemental source of funding for students. Yet, for most of them who cannot obtain a summer job, a student loan has become the only source of funding that permits them to continue their studies for another year. With the uncertainty of improvement in the Newfoundland economy for quite some time, it is likely that even more dependence on the Student Loan Program will result in future for a large number of Newfoundland youth. So, it is imperative that their pending and continuing participation in postsecondary education not be compromised because of an inability to obtain an adequate student loan.

Other barriers such as lack of access to courses and programs, lack of career direction, and insufficient knowledge of occupations and educational options were also identified in the study as important impediments for many youth. Several of the postsecondary administrators said during the interviews that general information was known about participation in postsecondary education in Newfoundland but that specifics were lacking on many of the pertinent factors believed to affect participation. The findings of this study were inconclusive on that matter in that the data provided incomplete information on variable such as access to programs, career directions, and knowledge of occupational and educational options. Further research is necessary in order to find out the specific nature of the effects of these variables as barriers to participation.

Of particular interest should be an examination of the small effects that were shown for the variables, Career Plans, Career Information, and Guidance. These variables have implications for both the secondary and postsecondary education systems in the province and were emphasized particularly by educators during the interviews as important considerations. Knowledge of the full effects of these variables on Participation is needed and on whether Departmental policy directed towards them in the past has been effective.

Beginning in 1987, a deliberate shift in policy occurred in the Department of Education towards the high school guidance program in Newfoundland. Whereas the emphasis had formerly been on psychological testing and counselling and personal problem resolution as the primary tasks of guidance counsellors, the new focus was directed towards career planning and career education. Detailed guidelines were established to assist counsellors to introduce the relevant programming and services in their schools. At the same time, resources were allocated for the development, dissemination, and use of career information materials. The goal was to help the students prepare for their eventual transition from high school into postsecondary education or into the labour market.

Whether the shift in policy produced the desired results is largely unknown. A comprehensive evaluation of the new program has not been undertaken. From the results of this study, it would appear the goals were not met. However, that conclusion is speculative pending a more rigorous evaluation of the program. For the moment, the findings reported here should be regarded as flags to indicate that further examination of the variables is warranted. The implications primarily pertain to a continuance of the policy but the implications for postsecondary participation are also evident. The benefits of the policy in assisting students in their transition to postsecondary education may be spurious.

In addition to the need to conduct further research into some of the variables used in the study, the theoretical model used in the regression analyses is deserving of follow-up research. The model was selected because in essence it was characteristic of models historically used in educational attainment research. However, the small effects of the background and intervening variables on Postsecondary Participation suggest that the model may have been mis-specified. That is, relevant variables may have been omitted that should have been included, irrelevant variables were included when they should have been left out, a linear model was used when a non-linear model might have been more appropriate, or the additive nature of the model through the inclusion of the intervening variables might have been inappropriate. (See Pedhazur, 1982, p. 225.) The total variance accounted for by the independent variables was approximately 22% in each of the three models--male, female, and integrated--which was not substantial. Comparable models that examined similar independent variables accounted for from 44% to 60% of the variance in their equations. (See, for example, Sewell et al., 1970; Turrittin et al., 1983; and Carpenter and Western, 1984.)

The model in this study showed only modest explanatory power by comparison. It highlighted 6 of 17 independent variables to be relatively influential in their effects on Participation when 13 of 17 variables actually showed statistical significance. Either the unknown residual variables need to be identified and included in the model or the nature of the items pertaining to the variables that were included need to be re-examined for validity purposes. Reference was made in earlier chapters to the purpose of the longitudinal study (YTLM) from which the appropriate data was obtained for this current study. The YTLM study was not designed as a participation study and consequently the instrument items were not validated for purposes of analysis connected with participation. This invalidation placed a limitation on the value of the findings for some variables, but the data selection approach was considered acceptable for an exploratory study of this kind.

The usefulness of the basic model has been sufficiently demonstrated in previous studies to accept it as being valid. Why it showed such low power in explaining the effects of the independent variables on Participation seems to be due more to the nature of the background variables, the intervening variables, or the dependent variable than to the model design itself. The criterion variable in particular was confounding because of its dichotomous nature. If the variable had been disaggregated into various forms of postsecondary participation, e.g., university, technical schools, community colleges, and private colleges, the explanatory power of the model would undoubtedly have been enhanced. Some of the independent variables that were used as linear composites might perhaps have produced stronger effects if the parameters of the actual items per se that made up the composites had been estimated in the regression equations. That way, individual empirical variables rather than single theoretical ones would have been measured and the dilemma pertaining to validity mentioned above could have been reduced or eliminated (Zeller, 1988, p. 324). Duncan (1975, p. 66) recognized that a model should not be faulted solely on the grounds of producing a low R^2 but should be examined for how the entire model was specified. Additional research could be directed towards this kind of examination.

Recommendations for Future Research

Additional research would build on the findings from this study and would additively contribute to a more complete explanation of the predictive influences on postsecondary participation. For example, advanced mathematics could be studied separately as an indicator of academic achievement rather than participation. The nature of this variable lends itself particularly to an experimental study or to several studies that could be undertaken simultaneously in different geographical regions of the province. The variable is also a natural criterion for a school-based research design where measures would apply to the level of the school instead of to the individual level as used in this study. In this way, school performance in advanced mathematics as well as individual performance could be demonstrated.

Further study is warranted on the variable, value of education in the home. Sound information is needed to resolve the paradox of non-participation in postsecondary education by academically able students from "good" families whose parents encourage their children to continue their studies after high school graduation. Little also seems to be known about the process of how esteem for education in the home contributes to the decision of siblings to enroll or not enroll in postsecondary education.

Almost no research has been undertaken in Newfoundland about the effects of the student loan program on participation in further education. Access to a student loan will undoubtedly become even more of a crucial factor in the near future in the decision of high school graduates to enter postsecondary education. Current concerns as expressed in the survey and interview data for this study pertained to students first obtaining a loan to enable them to enroll and second to obtaining an adequate loan to enable them to continue to participate. Another concern was also apparent. Some of the young people who were interviewed indicated their reluctance to go into debt, via a student loan, until they were sure of the postsecondary program they wished to pursue. Whether this kind of reluctance will become more widespread in the immediate and long term until the employment picture for postsecondary graduates improves is difficult to predict. Postsecondary students now depend heavily on the student loan program. In addition to a need existing to make loans more accessible in terms of the amount of a loan and the administrative ease of obtaining one, a new problem might be a reduction in demand because students will more and more hesitate to accumulate large debts to obtain higher education when there is no assurance they will find subsequent employment to repay the loans. The number of students defaulting on their loans might increase in the near future which could result in policy responses by government that could curtail access and availability even more than is now perceived to exist. In short, a number of important areas pertaining to the student loan program need to be explored and the time is appropriate to conduct research into these areas to determine their possible effects on future participation.

Variables such as guidance, career planning, and career information especially require more research. In particular, contextual research is needed to assess if differences apply in larger schools vs. smaller schools, between males and females, between rural and urban areas, and within a school system. Some of the basic assumptions underlying the present career education curriculum in particular need to be examined. The focus currently is on providing information on careers and educational options based on the assumption that the more information that students have, the better it will assist them in their decision making about postsecondary participation. This assumption may be only partly valid and further theoretical perspectives that are yet unknown to program developers or which have not been given a lot of consideration in the current career education program need to be explored. The emphasis, for example, may need to be placed on the way students process the information that is already available or on their perceptions of the value of such information to their career decision making.

Research into the status attainment model used in this study would be enlightening in order to develop a better specified and more refined model. The model would need to include a measure of socioeconomic status because such a variable is historically the essence of status attainment research. A socioeconomic measure that would be appropriate for the Newfoundland context would need to be developed, however, because SES measures typically used in most status attainment research generally pertain to highly urbanized societies where occupational classifications are more clearly defined and structured than they are in Newfoundland, which is still largely a rural society. But such a measure could be developed, perhaps using proxies for social status and economic status similar to those used by Williams (1987) for rural areas of Australia, or by incorporating social factors such as some of the variables used in this study, for example, family size, value of education, high school graduation, and career plans.

Concluding Comment

A final concluding remark pertains to the usefulness of the study results. The effects for most variables in the study were in the direction that was expected and they were generally similar to the findings of previous research on these variables. An important point is that many of the statistically significant independent variables can be directly manipulated by educational institutions in order to generate changes that could lead to greater participation in postsecondary education. Further research to substantiate the effects of the variables would be desirable, but some indicators are already apparent which can allow the change process to begin for the betterment of Newfoundland's youth. With the severe economic conditions currently facing the province, educational participation is regarded as instrumental in the government's strategic economic plan that is expected to reshape the provincial economy. Higher education in particular is viewed as an important means of revitalizing the province's labour force and for creating new employment opportunities. If the theoretical relationship between education and economic development is valid, the sooner a change process can begin that is directed at enhancing present levels of participation in postsecondary education, the quicker could positive results be realized that would bring about corresponding desirable changes in the economy.

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Appendix A

Pilot Study

Youth Participation in Postsecondary Education

Conducted at the University of Alberta, Winter, 1991,

Department of Educational Administration

PILOT STUDY

YOUTH PARTICIPATION IN POST-SECONDARY EDUCATION

Introduction

This pilot study will attempt to gather opinions from a selected group of people about factors that might influence young people into attending or not attending a post-secondary educational institution. When young people leave high school the options available to them are (a) to further their education by attending university, a technical institute or an educational institute of some sort, (b) to work, or (c) simply to do nothing. This study, of which the pilot is a part, will examine factors pertaining to their attendance or non-attendance in post-secondary education. You can help by giving me your frank and considered opinion on why **you** think young people chose to go or not go the post-secondary educational route. It will help me in preparing the final questionnaire for the main study.

Note. It is not necessary to place your name on this questionnaire.

Please fill in the blanks or circle the number corresponding to your response.

1. Sex:

Male...........1
Female 2

2. Your home community:

Urban.........1
Rural..........2

3. Do you think the majority (i.e., over 50%) of high school graduates undertake post-secondary education of some sort?

Yes.............1
No..............2

4. Are you attending a post-secondary educational institution now, either full-time or part-time?

Yes.............1
No.............2

5. Have you ever attended a post-secondary educational institution, either full-time or part-time?

Yes.............1
No.............2

6. Why do you think young people undertake post-secondary education? Circle as many as you wish.

Because they value education..1
To follow a career..2
To fill in the interim until they decide what they want to do...............3
Parental pressure...4
Peer pressure...5
To help in getting a well-paying job...6
Other (Please Explain)..7

____

____

7. The following factors are assumed to be some reasons why young people **do not** undertake post-secondary education. Please identify with a ✓ those which you think are influences and how important they are.

	Factors	1 Major Factor	2 Minor Factor	3 Not a Factor
1.	Do not like school			
2.	Do not qualify to attend			
3.	Cost			
4.	Do not value education			
5.	Prefer to work			
6.	Uncertain of what they want to study			
7.	Friends not going			
8.	Lack of information about post-secondary schooling			
9.	Lack of self-confidence			
10.	Distance from home			
11.	Father's education			
12.	Mother's education			
13.	Father's occupation			
14.	Mother's occupation			
15.	Type of home community			
16.	Participation by a brother or sister in post-secondary education			
17.	Job opportunity at home			
18.	Need to help family financially			
19.	Refuse to get student loan			
20.	Do not want to leave home			
21.	Intend to marry and raise a family			

Other (Please list):

8. What do you think is **the one main** reason why young people **take** post-secondary training or education?

9. What do you think is **the one main** reason why young people **do not take** post-secondary education or training?

10. Can you identify particular areas you think I should explore in a study of this kind which have not been mentioned? Please explain.

Thank you.

PLEASE RETURN TO SAM McGRATH
Dept. of Educational Administration
University of Alberta
130 - H, Ed. N
492-4944 (Bus.)
437-1425 (Res.)

Appendix B

Instrument Used in Survey 1

Youth Transition Into The Labour Market Study

Level III Questionnaire

Career Plans, Attitudes, and Knowledge Survey, 1989

Developed and Administered by

Institute for Educational Research and Development

Faculty of Education

Memorial University of Newfoundland

YOUTH TRANSITION INTO THE LABOUR MARKET STUDY

CAREER PLANS
ATTITUDES
KNOWLEDGE SURVEY
1989

LEVEL III
QUESTIONNAIRE

Institute for Educational Research and Development
Faculty of Education
Memorial University of Newfoundland

TO: All Level III students and those who have returned for fourth year of high school to complete graduation requirements and to receive a diploma.

You are being asked to help in a study of the problems that young people face when they get ready to leave high school and go on for further education or get a job. This study is being done by the Institute for Educational Research and Development, Memorial University. It will last for several years, and you will receive a questionnaire from time to time asking for information on your progress in those first important years after high school.

This questionnaire is divided into three sections: Section A deals with background information; Section B asks about your present plans and aspirations as you are leaving school; Section C concerns your attitude towards and knowledge of work.

You do not have to answer any questions unless you want to. The information you give will be held in strict confidence. It will be used only by the persons engaged in this study and will be reported anonymously, on a group basis.

THANK YOU FOR YOUR COOPERATION

SECTION A
Background Information

1. *Name:* ____

2. *Sex:*

Male	*1*
Female	2

3. *Date of Birth:*

Month: ____________________
Day: ____________________

Year: ____________________

4. *Place of Birth:* ____________________________________
5. *School:* ____
6. *Community you live in:* ________________________________

7. How long have you lived in this community?

Less than 1 year	1
1-2 years	2
More than 2-5 years	3
More than 5-10 years	4
Over 10 years	5

8. Have you ever lived outside Newfoundland or Labrador?

Never	1
0-6 months	2
7 months - 1 year	3
More than 1 year	4

9. *If you have ever lived outside Newfoundland or Labrador, how many years old were you when you came back to the Province the last time?*

Years old: ____________________

10. *Do you belong to one of the following groups?*

Innu	*1*
Inuit	*2*
Conne River Indian	*3*
Immigrant - first language English	*4*
Immigrant - first language other than English	*5*

11. Which of the following describes your home situation most of the time?

I live at home with my father and mother 1
I live with relatives or friends 2
I live alone 3
I live at home with my mother 4
I live at home with my father 5

12. *How many brothers and sisters do you have?* ____________________________

If any are you:

the oldest 1
between the oldest and youngest 2
the youngest 3

13. How would describe your general state of health?

I have always been healthy 1
I have had a serious illness this year 2
I am well most of the time 3
I have a serious, long term illness or disability 4
I have had a serious illness but am now in good health 5

14. *If you have a disability, circle all that apply.*

I am visually handicapped 1
I have a motor disability 2
I am partially or completely deaf 3
I am confined to a wheelchair 4
Medical condition (e.g. epilepsy, diabetes) 5
Learning disability 6

15. *How have you spent your time after school and on weekends this school year? (Answer each activity a to h)*

a. Work for the family or the family business (e.g. working in odd jobs/store)

Yes 1
No 2
If yes, number of hours per week: ____________

b. Part-time work for a non-family business (e.g. paper route, babysitting)

Yes 1
No 2
If yes, number of hours per week: ____________

c. Self-employed work (e.g. cutting lawns, snow shovelling)

Yes 1
No 2

If yes, number of hours per week: ____________

d. *School and community activities (e.g. organized athletics, cadets, clubs)*

Yes *1*
No 2

If yes, number of hours per week: ______________

e. *Hobbies and interests (e.g. sewing, trouting, street hockey)*

Yes *1*
No 2

If yes, number of hours per week: ______________

f. *Watching television*

Yes *1*
No 2

If yes, number of hours per week: ______________

g. *Homework*

Yes *1*
No 2

If yes, number of hours per week: ______________

h. *Other (e.g. relaxing, dating, hanging out)*

Yes *1*
No 2

If yes, number of hours per week: ______________

16. *Since starting high school have you participated in special summer programs or other special summer camps? (e.g. computer camp)*

Yes *1*
No 2

If yes, what are they?

____
____
____

17. How many days were you absent from school this year?

No. of days: ______________________________

18. How may times were you late for school this year?

No. of times: ____________________

19. Were you suspended from school this year?

Yes 1
No 2

20. *Have you ever repeated a grade?*

Yes *1*
No 2

IF YES:

a. How many times? ____________________

b. Which grades did you repeat? ____________________

21. *Have you ever though about dropping out of school?*

Never *1*
Thought about it *2*
Actually dropped out *3*

a. If you have thought about dropping out of school, or if you have actually dropped out, why did you return? ____________________

b. Did you talk to anybody who helped you to decide to stay in or go back to school?

Yes 1
No 2

IF YES:

c. Check how much the following people helped in your decision:

	A lot	A little	Not at all
Friends	1	2	3
Mother	1	2	3
Father	1	2	3
Teacher/principal	1	2	3
School Counsellor	1	2	3
Other	1	2	3

22. *Which of the following best describes your average mark so far this year? (Circle one).*

40 45 50 55 60 65 70 75 80 More than 80

23. If you worked at your studies the best you could, how many marks more on the average do you think you would get?

No more	1
5 marks more	2
10 marks more	3
15 marks more	4
20 marks more	5

24. To what extent are you concerned about the following?

	Not concerened (one of my strengths)	Somewhat Concerned)	Concerned (Causes Problems)
Study Skills	1	2	3
School rules	1	2	3
Career concerns	1	2	3
Friendships	1	2	3
Talking to strangers/adults	1	2	3
Science	1	2	3
Math	1	2	3
Language Arts	1	2	3
Social Studies	1	2	3
Elective courses	1	2	3

25. Which mathematics program did you take in Level III?

Academic math	1
Honours math	2
Basic/Business math	3

26. Did you take Career Education 3101?

Yes	1
No	2

If yes, how helpful has it been to you in making plans for your future career?

Very helpful	1
Helpful	2
A little helpful	3
No help	4

27. Compared to all students in your grade at your school, which of the following statements best describes your achievement in school this year?

My marks were among the lowest	1
My marks were low but not among the lowest	2
My marks were fairly good but not among the best	3
My marks were among the best	4

28. Do you expect to fulfill the requirements for graduation from Level III and receive diploma this year?

Yes	1
No	2

29. Think ahead 5 or 10 years from now.

a. What will you be doing?

Working in a job/career	1
Homemaker	2
Both of above	3
Don't know	4

b. Do you think you will get seasonal work and collect Unemployment Insurance?

Yes	1
No	2
Don't know	3

SECTION B
Career Plans

Please fill in the blanks or circle the number corresponding to your response.

30. *Think of the career you would like to enter in the future.*
*What is it?*______________________________

31. *Have you thought of starting a business of your own in the future?*
Yes *1*
No 2

IF YES:
*(a) What business?*______________________
(b) How much money would you need to start this business?______________________

32. *Briefly tell how you chose the above career and/or business:*
____
____
____

33. How much do you expect ot earn the first year of work?
$8,000-$9,999 1
$10,000-$14,999 2
$15,000-$19,999 3
$20,000-up 4
Don't know 5

34. *Will the career or business you have chosen require further education/training?*
Don't know *1*
On the job training *2*
Required to attend school *3*
Both *4*

35. *Do you plan to attend a post-secondary institution after you finish your education at high school?*
Yes *1*
No 2
Undecided: *3*

IF YES:

a. *What institution will you attend?*______________________________
or *Don't know* *1*

b. What program will you take?______________________________
or Don't know 1

36. (a) *How much have you discussed your career plans with the following people?*

	A lot	A little	Not at all
1. Friends	1	2	3
2. Father/guardian	1	2	3
3. Mother/guardian	1	2	3
4. Person in the job	1	2	3
5. Relatives	1	2	3
6. School Counsellor	1	2	3
7. Teacher	1	2	3
8. Nobody	1	2	3
9. Clergy	1	2	3
10. Other e.g. social worker	1	2	3
11. Visitor from institution	1	2	3
12. Not answering question as asked, e.g. books, me	1	2	3

(b) *Who of the above was the most helpful?*____________________________________

37. Where whould you prefer to work? *(Circle one)*

I'd like work that is close to home 1
I wouldn't mind going somewhere else in the province where I had relatives 2
I'd go anywhere in the province for a job 3
I'd go anywhere, including other provinces, in order to get a job 4

38. *When people look for a job, there are some characteristics about the job which are more important to them than other characteristics. Read the following group of three and for each group, write in the number of what is most important to you, and what is least important to you.*

(a)
1. *Work that pays well*
2. *Work that gives a feeling of accomplishment*
3. *Work where the other people are friendly and helpful*
4. *No response*
5. *Multiple response*

Most important . . . . ___
Least important . . . . ___

(b)
1. A workplace that is healthy and safe
2. Work where you make most of the decisions yourself
3. Work that gives you a chance to help other people

Mos important . . . . ___
Least important . . . . ___

(c)
1. Work with little chance of being laid off
2. Work that is interesting
3. Work with good chances of promotions and advancement

Most important . . . . ___
Least important . . . . ___

39. Do your present plans include marriage?

Yes	1
No	2

IF YES
in how may years?

Less than one year	1
1-2 years	2
More than 2-4 years	3
More than 4-6 years	4
More than 6 years	5

40. Which one of the following statements best describes what your father/male guardian thinks you should do after you finish high school?

Does not care what I do after high school	1
Might like me to continue my education after high school	2
Definitely would like me to continue my educatin after high school	3
Insists that I continue my education after high school	4
Thinks I shoulc start to work for pay after high school	5
Wants me to work for the family after high school	6
I don't know what he would like me to do after high school	7

41. Does your father/male guardian agree with your plans for next year?

Agrees completely	1
Agrees mostly	2
Disagrees somewhat	3
Disagrees a lot	4
I have no plans	5

42. Which one of the following statements describes what your mother/female guardina thinks you should do after high school?

Does not care what I do after high school	1
Might like me to continue my education after high school	2
Definitely would like me to continue my educatin after high school	3
Insists that I continue my education after high school	4
Thinks I shoulc start to work for pay after high school	5
Wants me to work for the family after high school	6
I don't know what he would like me to do after high school	7

43. Does your mother/female guardian agree with your plans for next year?

Agrees completely	1
Agrees mostly	2
Disagrees somewhat	3
Disagrees a lot	4
I have no plans	5

44. *The following contains a list of educational/training places. (Please circle the ones, if any, that you have given __serious thought__ to attending, since you started Level III).*

I haven't thought about attending any	*1*
Cabot Institute	*2*
Community College	*3*
Fisher Institute	*4*
Hospital Nursing School	*5*
Marine Institute	*6*
Memorial University	*7*
Sir Wilfred Grenfell College	*8*
Private Career College (e.g. Compu-College)	*9*
Armed Forces	*10*
Police Academy	*11*

* *Other institution in the province (please name the institution:)*

** *Other institution outside the province (please name the institution):*

45. If you wanted to continue your education/training after high school, how much of the total cost do you know your family will pay for?

Don't know	1
None	2
About one-quarter	3
About one-half	4
About three-quarters	5
All	6

46. Besides your family, what is the main way you know you could help pay for your education. (*Circle one*)

Have not thought about it	1
Could not help pay	2
Summer job full-time	3
Summer job part-time	4
Part-time during the year	5
Work full-time for a year	6
Work with the family (fishing, etc.)	7
Scholarship	8
Bursary	9
Student Loan	10
CEIC (Manpower) Seat	11
Enlist in Armed Forces	12
Personal Savings	13

47. If you wanted to continue your education/training after high school, would your family borrow money to pay for it?

Yes	1
No	2
Don't know	3

48. If you could borrow from the bank, or get a student loan, how would you feel about borrowing money yourself to pay for your education/training? *(Circle one).*

You should never borrow money for education 1
You should only borrow if you feel you will get a good job to pay it back 2
You definitely should borrow, because further education would always be worth it 3

49. Bursaries, scholarships and student loans are ways which help pay for education/training.

a. How much do you know about them?

	Quite a lot	Not very much	Nothing at all
Bursaries	1	2	3
Scholarships	1	2	3
Student Loans	1	2	3

b. *Answer the following questions concerning bursaries, scholarships and student loans.*

	Bursaries	*Scholarships*	*Student Loans*
Where do you get information?			
How much money can you get?			
How do you go about obtaining money?			

50. *What is your main source of spending money at the present time? (Circle one).*

Parents give me an allowance 1
I work part-time 2
Other (please specify)________________________

51. *How much money did you spend on the average each week this year?* ____________________

52. a. Have you ever heard of the career hot line?

Yes 1
No 2

b. Have you ever phoned the career hot line?

Yes 1
No 2

c. If you phoned the career hotline, was it helpful?

Yes 1
No 2

d. *If you phoned the career hotline, what did you ask?*

____
____
____

53. What are your thoughts about next year? What do you plan to do? Which of the following plans describe you best? *(Circle one)*

I don't have a plan (answer questions 54 to 61) 1
I plan to take the year off (answere questions 54 to 61) 2
I would like to continue my education/training but I may have
    to go to work (answer questions 54-61) 3
I shall probablly continue my education/training but I would
    rather go to work (anwer questions 54 to 61) 4
I definitely plan to go to work (answer questions 54 to 58) 5
I definitely plan to continue my education/training (answer question 59 to 61) 6
I plan to return to high school in September (Go to Section C, question 62) 7

54. a. *If you may not continue your education/training next year, please circle all the reasons that apply. If you have a reason that is not listed, please write it down.*

I may not have enough money for school 1
I have to go far from home 2
I would like to start supporting myself 3
I don't know if I have the ability to do well in post-secondary education 4
I haven't been able to decide what program to take 5
I may stay at home and keep house 6
Inadequate qualifications 7
Work experience 8
Dislike school 9
Take break 10
Other 11
Don't know 12

b. *Which of the above would be the most important reason for not continuing your education next year?* ____

55. *If you think you may be working next year, describe any jobs that you would like to do.*

JOB TITLE *BRIEF DESCRIPTION OF WORK*

1. ____
____
____

2. ____
____
____

3. ____
____
____

56. Have you actually applied fro any jobs yet?

Yes	1
No	2

If YES to Question 56:

57. *List all the jobs full-time/part-time, seasonal/year-round that you have applied for, and tell if you applied in person, or by sending in an application, and hours worked per week.*

Job Applied For	*Seasonal*	*Year Round*	*Applied in Person*	*Filled Out Application*	*Hours Per Week*

b. *Did you get one of the jobs you applied for?*

Yes	*1*
No	*2*

c. *If yes, which one?*______________________________

58. IF NO to Question 56, (if you have not applied for any jobs yes):

a. *When will you begin to apply for a job? (Circle one)*

May	*1*
Right after exams	*2*
July	*3*
At end of summer	*4*
Other	*5*
I am not going to apply	*6*

b. *List all the jobs part-time/full time, seasonal/year-round that you plan to apply for and tell if you are going to apply in person, or to send in an application.*

Job Applied For	*Seasonal*	*Year Round*	*Applied in Person*	*Filled Out Application*	*Part Time*	*Full Time*

59. *Following is a list of institutions. Complete columns a, b, c and d.*
Column a. Have you sent an application to the institution?
Column b. Have you visited the institution?
Column c. Have you read information about the institution?
Column d. Have you heard a talk by a visitor from the institution at school?

Institutions	a Sent Application	b Visited	c Read Information	d Heard Speaker
Cabot Institute				
Community College				
Fisher Institute				
Hospital Nursing School				
Marine Institute				
Memorial University St. John's Campus				
Sir Wilfred Grenfell College				
Private Career Colleges				
Police Academy				
Other Institution in Newfoundland				
Armed Forces Plan				

60. If you were to go to school for your further education/training, where would you want to go. *(Circle one)*

I won't go if I can't live at home 1
I'd prefer to live at home, but would go elsewhere if absolutely necessary 2
I'd like to live away from home but still within the province 3
I'd like to go to school somewhere outside the province 4
I would go to school wherever I am accepted 5

61. a. *If you decide to continue your education next year, how much money (total) will you need for the year?*____________________________

b. *What would be your main source of funds?*____________________________

c. *What would be the second source of funds?*____________________________

SECTION C

62. Do you Strongly Agree, Agree, Disagree or Strongly Disagree with the following statements? *(Circle one number for each statement).*

	Stongly Agree	Agree	Disagree	Stongly Disagree
a. I would not mind being unemployed for a while	1	2	3	4
b. If I could earn $8 an hour I would take any job	1	2	3	4
c. I am not ready for a long term committment to a job	1	2	3	4
d. I'd do just about any kind of work if it were a steady job	1	2	3	4
e. I'd rather collect welfare than work at a job I didn't like	1	2	3	4
f. Workers should have the right to refuse to work under conditions which they consider to be unsafe . .	1	2	3	4
g. If some one has worked hard in school, they are entitled to a good job . . .	1	2	3	4
h. I would work for less than the minimum wage	1	2	3	4

i. Everyone has the right ot collect welfare/unemployment insurance untile he/she finds a job in his/her area of training 1 2 3 4

j. Everyone has the right to the kind of job for which his/her education and training has prepared him/her 1 2 3 4

k. Having a job makes me feel I'm doing something useful with my life 1 2 3 4

63. *Here are four ways to learn how to do something new:*

1. *Learn on your own from books and through practising.*
2. *Learn by watching other people do it, then practice on your own.*
3. *Learn by taking practical courses.*
4. *Learn by helping someone do the job.*

a. *Which way do you prefer the most? (Write the number of the most preferred)*_______

b. *Which way do you prefer the least? (Write the number of the least preferred)*_______

64. *People might have trouble finding work for many different reasons. Some reasons grouped in pairs follows. Read each pair of reasons and circle the one which you think is more important for each pair from a - f.*

a. Inadequate advice by teachers and guidance counsellors 1
Lack of effort by the unemployed to find a job 2

b. Many young people are not that concerned about finding a job right now 3
Young people lack the work experience that employers want 4

c. Young people do not know how to present themselves favorably in job interviews 5
Young people get poor advice from counsellors 6

d. You have to know someone or pull few strings to get a job 7
Young people are too choosey about jobs they will take 8

e. Getting a job depends on having a good attitude about working . . 9
Schools and universities do not provide the knowledge and skills that employers want 10

f. There are no jobs to be had 11
People don't want to move to where the work is 12

65. *Would it be very easy, easy, somewhat difficult or very difficult for you to learn to do the following jobs, assuming you wanted to?*

	Very Easy	Easy	Somewhat difficult	Very difficult
Clerk in a store	_____	___	__________	_________
Manager of a store	_____	___	__________	_________
Dentist	_____	___	__________	_________
Nurse	_____	___	__________	_________
Naval Ardchitect	_____	___	__________	_________
Electrician	_____	___	__________	_________
Typist	_____	___	__________	_________
Truck Driver	_____	___	__________	_________
Cook	_____	___	__________	_________
Teacher	_____	___	__________	_________
Deck Hand on a Trawler	_____	___	__________	_________
Fish Plant Worker	_____	___	__________	_________

66. *When you have a job, certain attributes are more important to an employer than other attributes. Read the following groups of three and for each group, write in the number of what you think would be most important to an employer and what would be least important to an employer.*

a. *1. Being on time for work*
2. Listening closely and carefully to instructions
3. Doing top quality work

Most important . . . . . . ___
Least important . . . . . ___

b. 1. Not being absent from work
2. Asking for more when finished a job
3. Learning new skills to use on the job

Most important . . . . . ___
Least important . . . . . ___

c. 1. Having good relations with fellow workers
2. Keeping up work whent he boss insn't around
3. Getting the idea quickly and accurately on a new job

Most important . . . . . ___
Least important . . . . . ___

d. 1. Not getting angry when the boss criticizes you
2. Being neat and tidy while I work
3. Getting a lot done

Most important . . . . . ___
Least important . . . . . ___

e. 1. Having a neat, tidy appearance
2. Working steadily, even if more slowly
3. having a high level of knowledge about the job

Most important . . . . . ___
Least important . . . . . ___

67. What would most of your teachers say about you if they were answering the following questions about you? *(Answer all questions by circling the number).*

WOULD YOU TEACHERS SAY?

a) you practice good personal hygiene (keep clean, brush teeth, etc)?

Always 1
Often 2
Sometimes 3
Never 4

b) you organize your work?

Always 1
Often 2
Sometimes 3
Never 4

c) you can be depended upon to do assignments and other work?

Always 1
Often 2
Sometimes 3
Never 4

d) your work is done neatly?

Always 1
Often 2
Sometimes 3
Never 4

e) your clothes are neat and tidy?

Always 1
Often 2
Sometimes 3
Never 4

f) you wear clothes that are appropriate to the occasion?

Always 1
Often 2
Sometimes 3
Never 4

g) you take criticism without getting angry?

Always 1
Often 2
Sometimes 3
Never 4

h) you get along well with your teachers?

Always 1
Often 2
Sometimes 3
Never 4

i) you get along well with students you have to work with?

Always 1
Often 2
Sometimes 3
Never 4

j) you take good care of school property?

Always 1
Often 2
Sometimes 3
Never 4

k) you a steady worker

Always 1
Often 2
Sometimes 3
Never 4

l) you get your work done on time?

Always 1
Often 2
Sometimes 3
Never 4

m) you understand the teacher's directions?

Always 1
Often 2
Sometimes 3
Never 4

n) you continue to work in school when the teacher is not in the room?

Always 1
Often 2
Sometimes 3
Never 4

o) you are proud of your work in school?

Always 1
Often 2
Sometimes 3
Never 4

p) you ask for help from the teacher if you are having trouble?

Always 1
Often 2
Sometimes 3
Never 4

q) you are interested in learning new things?

Always 1
Often 2
Sometimes 3
Never 4

68. *Have you been out of school for any extended period of time (besides summer holidays?)*

Yes *1*
No *2*

IF YES:

a. What was your reason?

To work full time (more than 30 hours per week) *1*
To work part-time *2*
Pregnant *3*
Ill *4*
Dropped out *5*
Other (please specify) *6*
Don't know *7*

b. If you worked , for how long?

Less than 3 months 1
3 - 6 months 2
Greater than 7 months - 1 year . 3
Longer than 1 year 4

69. *Have you ever had a part-time job while going to school?*

Yes *1*
No *2*

IF YES: Think about your last part-time job.

*a. What was the last part-time job?*__________________________________

*b. How much money did you earn each week?*____________________________

*c. How many hours did you work each week?*____________________________

d. For how long have/had you been working part-time?

Less than 6 months . . . 1
6 months - 1 year 2
2 years - 3 years 3
4 years - 5 years 4
More than 5 years 5

70. *Did you ever have a summer job while going to school?*

Yes *1*
No *2*

IF YES:

*a. How many summers have you worked full-time?*____________________

b. What was the last summer job?____________________

*c. How many hours per week did you work at the last summer job?*____________

*d. How many weeks did you work at the last summer job?*_______________

*e. How much money did you earn each week at the last summer job?*___________

71. *If you have ever worked part-time, summer time, or in your own business. Why did you work? (Circle the most important reason?*

For the money 1
For the experience 2
To help the family 3
To pay for something special that I wanted 4
To pay for further education 5
Other (please specify) ______________________________

72. a. Think about your last job or the job you are now in. Did/do you enjoy the work?

No 1
Not very much 2
Yes 3
Very much . . . 4
Never worked . 5

b. What did/do you like most about the work?

____

c. What did/do you like least about the work?

____

d. *If you are no longer working, why did you stop working?*

____

73. How did you get your last job? *(Circle as many as apply)*

Through family business	1
I had been self-employmed	2
I knew someone who got me a job	3
Application/resume	4
In person	5
Telephone	6
I applied for a job at the company	7
I went to Canada Employment and Immigration Office	8
Filled out company application form	9
Employer contacted me	10
I got it through projects (YMCA, Outreach, Job Generation)	11
I have never worked	12

74. *What do you think is the best way to get a job?*

____

____

75. *If you were sending in a letter to apply for a job, you would try to tell the employer things about yourself that would help the person reading the letter to decide if you should be hired or not. Please list below the things that you would tell about yourself in your letter.*

Put down as many things that you can think of that might be important.

1. ____
2. ____
3. ____
4. ____
5. ____
6. ____
7. ____
8. ____
9. ____

76. *In the column on the left are listed industries which provide jobs in Newfoundland. Read the title and decide whether you think the industry is going to provide the same number of jobs in 1994 as it provided in 1989. If you think it is the __same__, circle (same); if you think there will be __more__, circle (more); and if you think there will be __fewer__ jobs, circle (fewer).*

Industry	Newfoundland		
Fishing	More	Same	Fewer
Mining (ore)	More	Same	Fewer
Petroleum (oil)	More	Same	Fewer
Pulp and Paper	More	Same	Fewer
Construction	More	Same	Fewer
Retail Trade	More	Same	Fewer
Education	More	Same	Fewer
Health	More	Same	Fewer
Government Work	More	Same	Fewer
Agriculture	More	Same	Fewer
Ship-Building and Repair	More	Same	Fewer
Printing & Publishing	More	Same	Fewer

Appendix C

Youth Transition Into the Labour Market (YTLM)

Level III: Second Follow-Up Survey Questionnaire

January, 1991

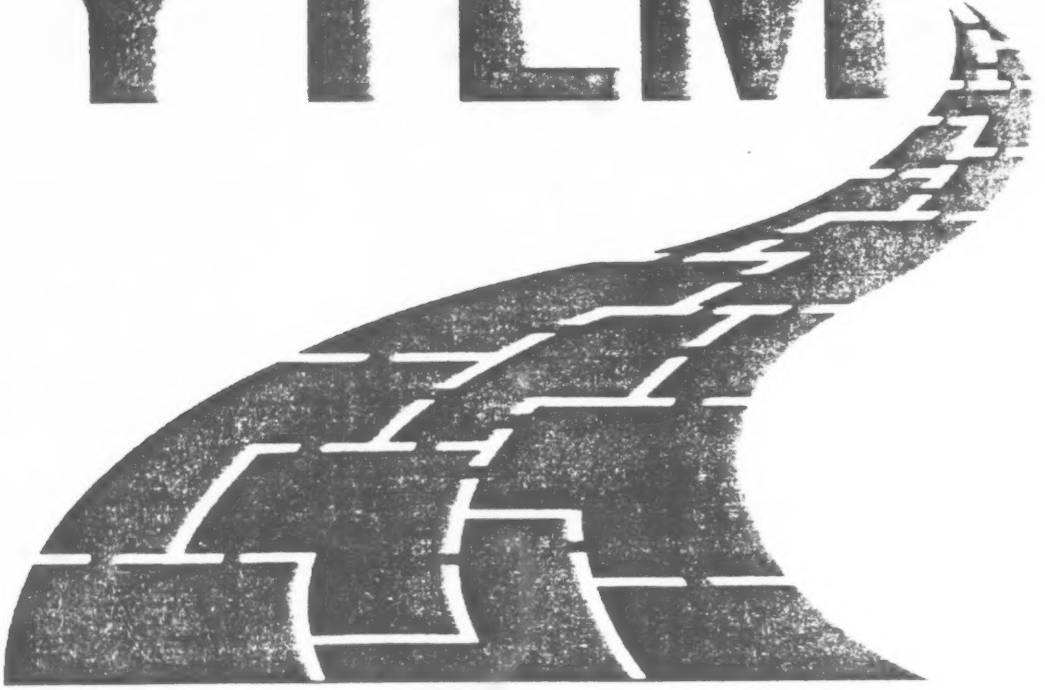
Developed and Administered by

Centre for Educational Research and Development

Memorial University of Newfoundland

YOUTH TRANSITION INTO THE LABOUR MARKET

YTLM



LEVEL III:

SECOND FOLLOW-UP SURVEY QUESTIONNAIRE

Centre for Educational Research and Development
Memorial University of Newfoundland

January 1991

TO: ALL YOUTH TRANSITION STUDY PARTICIPANTS

This is the second follow-up of the study of youth transition that began when you were in level III in high school. We know that many things have changed in your lives since that time. We would like to get an update on those changes if you are willing to continue your help.

The study is about the problems that young people must face and solve after they leave high school, as they try to continue their education and begin their careers. The questionnaire should take about one half hour to complete. The answers you give will be tabulated in reports so that your identity is not revealed.

You do not have to answer any questions unless you want to. The information you give will be held in strict confidence. It will be used only by the persons engaged in this study and will be reported anonymously, on a group basis.

THANK YOU FOR YOUR COOPERATION AND HELP WITH THIS

Please start with Section A and work your way through the questionnaire →

SECTION A

WHAT HAVE YOU BEEN DOING OVER THE PAST YEAR?

1. Take a moment and think back on your activities of the last year. Tell us what you were doing each month since January 1990 in terms of your work, education, and place of residence.

DESCRIBE WHAT YOU DID EACH MONTH BY TICKING AS MANY BOXES AS YOU NEED TO

FOR AT LEAST 2 WEEKS OF THAT MONTH I WAS?

1990

	J	F	M	A	M	J	J	A	S	O	N	D
WORKING FOR PAY												
Full-time (more than 30 hrs)												
Part-time (less than 30 hrs)												
Not working												
AT SCHOOL/TAKING A COURSE/TRAINING												
Full-time												
Part-time												
INVOLVED WITH												
Homemaking/home duties												
Looking for work												
Ill or incapacitated												
LIVING												
At home community												
Elsewhere in Newfoundland												
Outside of Newfoundland												
OTHER												

2. If you graduated from high school, what month and year did you graduate?

Month ________ Year _____ Didn't finish ____

3. If your high school education has been helpful in any way, in what way has it been most helpful to you?

____

4. What is your current status and residence?

Living at home with parents . . . . ☐
Living independently . . . . ☐
Married . . . . ☐
Living common law . . . . ☐
If you have children, how many do you have ________________

5. Would you tell us how your life been during the last year?
In 1990, all in all, how satisfied were you with: (*Check on box in each line*)

	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied
Life as a whole				
Outlook for the future				
Standard of living				
Where you lived				
Money you had this year				
Social life				
Spare/leisure time activities				
Level of independence				
State of health				
General career outlook				

6. Looking back since when you were in high school, how would you rate the way your life has gone since leaving high school? *(Check one box only)*

Not nearly as well as I expected . . . . ☐
Not quite as well as I expected . . . . ☐
Better than I expected . . . . ☐
Much better than I expected . . . . ☐

7. Looking back on high school, please rate how you feel that your high school education has helped you in your life. *(Check on box only)*

Has not been at all helpful . . . . ☐
Helped a little, but not much . . . . ☐
Helped quite a lot . . . . ☐
Been very helpful . . . . ☐

8. In what ways could high school be improved to help people more once they have graduated?

____

SECTION B

WHAT ARE YOUR PLANS FOR THIS YEAR (1991)?

9. Now, please take a few moments to think about what you will be doing in the coming year (during 1991). Tell us what you expect to be doing each month in terms of your work, education, and where you live.

DESCRIBE WHAT YOU EXPECT TO DO EACH MONTH BY TICKING AS MANY BOXES AS YOU NEED TO

FOR AT LEAST 2 WEEKS OF THAT MONTH I EXPECT TO BE DOING?

1991

	J	F	M	A	M	J	J	A	S	O	N	D
WORKING FOR PAY												
Full-time (more than 30 hrs)												
Part-time (less than 30 hrs)												
Not working												
AT SCHOOL/TAKING A COURSE/TRAINING												
Full-time												
Part-time												
INVOLVED WITH												
Homemaking/home duties												
Looking for work												
Ill or incapacitated												
LIVING												
At home community												
Elsewhere in Newfoundland												
Outside of Newfoundland												
OTHER												

10. If you plan to take a course or enroll in a training program in 1991:

What Program? ____

Have you applied as of yet? . . . . Yes ☐ No ☐

11. Think about your work plans in 1991. *(Check all that apply):*

I will stay in my present job . . . . ☐
I will look for (better) work . . . . ☐
I will leave my present location to
  look for work elsewhere in Newfoundland . . . . ☐
I will leave my present location to
  look for work on the Mainland . . . . ☐
I don't plan to work . . . . ☐

SECTION C

WHERE DO YOU EXPECT TO BE IN FIVE YEARS?

12. Five years from now: *(Check one box in each line)*

DO YOU THINK....	Yes	No	Don't Know
you will be in a full-time career?			
you will be working at a seasonal job?			
you will collect unemployment insurance?			
In five years time do you expect to be a full-time homemaker?			

13. Where do you expect to be living in order to pursue your career plans five years from now? *(Check one only)*

In or near my home community . . . . ☐
Elsewhere in Newfoundland . . . . ☐
Outside the province . . . . ☐

14. How much money do you expect to be earning five years from now? *(Check one only)*

0-15,000 . . . . ☐
15,001-20,000 . . . . ☐
20,001-25,000 . . . . ☐
25,001-30,000 . . . . ☐
30,001-35,000 . . . . ☐
35,000-40,000 . . . . ☐
More than 40,000 . . . . ☐

15. How much education beyond high school do you plan to have at the end of the next five years? *(Check one only)*

No further education or training planned . . . . ☐
Less than six months . . . . ☐
More than six months to a year . . . . ☐
More than one year to two years . . . . ☐
More than two years to three years . . . . ☐
More than three years to four years . . . . ☐
More than four years . . . . ☐

16. Think of the career you would like to be doing five years from now. What will you do?

____

What type of industry will it be in? ____________________

Will you have your own business? . . . . Yes ☐ No ☐

What type of business? ____________________________

17. What is the major reason why you plan to take this career path? *(Check all that apply)*

It will let me work with people . . . . ☐
It will allow me to stay near home . . . . ☐
I will be able to go to new places to visit or live . . . . ☐
I feel it will provide me a good income . . . . ☐
I like this type of work . . . . ☐
Other . . . . ☐
Name __________________________________

18. What do your parents think of these long range plans? *(Check for each of mother & father)*

	Father	Mother
Parent has not been informed of these plans	☐	☐
Parent agrees completely with these plans	☐	☐
Parent mostly agrees with these plans	☐	☐
Parent somewhat disagrees with these plans	☐	☐
Parent disagrees considerably with these plans . . .	☐	☐

SECTION D

WHAT PROGRESS DID YOU MAKE IN YOUR CAREER IN 1990?

19. Some people have problems in getting started after they leave high school. Please indicate how much each of the following has been a problem for you. *(Tick one box in each line)*

	Not a Problem	Somewhat of a Problem	A Serious Problem
Finding a place to live			
Managing personal finances			
Finding spare time			
Finding a job you liked			
Knowing how to look for a job			
Being too young to get good jobs			
The scarcity of jobs			
Not having enough experience			
Having money to look for work			

20. The following is a list of possible problem areas in working on a job. Please indicate how much of a problem each has been for you. (*Tick one box in each line*)

	Not a Problem	Somewhat of a Problem	A Serious Problem
Reading-following written instructions			
Math-doing arithmetic, figuring out pay cheque, etc.			
Getting along with fellow employees			
Getting along with the boss			
Learning the actual work			
Stress and tension because of work			

21. Some young people have problems when deciding to get further education. Please indicate how much of a problem each has been for you. *(Tick one box in each line*

	Not a Problem	Somewhat of a Problem	A Serious Problem
Finding time to go to school			
Finding available courses near where you live			
Meeting entrance requirements			
Having to work to support yourself/family			
Getting information about courses			
Getting money to pay for education			
Finding the right course/program that is given close to home			

22. There are people/places where you may get help in looking for jobs. Please indicate if you were ever in contact with some of these since January 1990 and if they were helpful or not. *(Check one box in each line)*

	No Contact	Helpful	Somewhat Helpful	Not Helpful
Canada Employment and Immigration Centre				
Career Information Hotline				
Youth Employment Strategy Program				
Community College				
Social Services				
School guidance counsellor, teacher				
Parents				
Friends/relatives				

23. There are people/places where you may get help in planning to continue your education. Please indicate if you were in contact with any of the following during 1990, and if they were helpful or not. *(Check one box in each line)*

	No Contact	Helpful	Somewhat Helpful	Not Helpful
Canada Employment and Immigration Centre				
Career Information Hotline				
Youth Employment Strategy Program				
Community College				
Social Services				
School guidance counsellor, teacher				
Parents				
Friends/relatives				

24. List three different jobs you think you could do well if you got the right education.

1. ____________________

2. ____________________

3. ____________________

Circle the number of the job (from question above) that you would like to do best. 1 2 3

25. Do you think taking courses will help you get a job? . . . . Yes ☐ No ☐

26. Could you tell us what you think about the availability of jobs at the present time? If you were looking for work, are there many jobs available that you could qualify for? *(Check one box in each line)*

	No jobs	Few Jobs	Many Jobs
In your home community			
Elsewhere in Newfoundland			
Elsewhere in Canada (outside of Newfoundland and Labrador			

27. Will the Hibernia project be helpful to you in advancing your work or career? *(Check on only)*

- Very helpful . . . . ☐
- Somewhat helpful . . . . ☐
- A little helpful . . . . ☐
- No help . . . . ☐

28. How many courses/programs did you apply for during 1990? ____________

29. How many jobs did you apply for during 1990? ______________________________

30. In the last two years before you left high school, what work did your parents do?

	Father	Mother
Deceased	☐	☐
Worked full-time	☐	☐
Worked part-time and unemployed part-time	☐	☐
Was unemployed	☐	☐
Don't know	☐	☐
Homemaker	☐	☐

When employed, what was your father's occupation? ____________________

What was your mother's main occupation? ____________________

SECTION E

WHAT WAS YOUR EXPERIENCE AS A WORKER DURING 1990?

31. Think back over the jobs you have had last year (from January 1990 to December 1990), and respond to the following questions about the jobs that you had.

Did you have a job during 1990.

Yes ☐ No ☐ ☛ go to **Section F, page 15**
↓
How many jobs did you have where you worked 30 hours or more per week? ______
How many jobs did you have where you worked less than 30 hours per week? _____
How many seasonal jobs did you have? __________

	Yes	No
When you worked did you ever have two jobs at the same time . .	☐	☐
If you worked before leaving high school, was it helpful in getting work?	☐	☐
Did you leave a job last year because it was too difficult	☐	☐
Did you leave a job last year because you didn't like it?	☐	☐
Were you laid off from a job last year?	☐	☐
Were you fired from a job last year?	☐	☐
Did your employer give training to improve your work skills last year other than general orientation?	☐	☐
Were you given a better job or promoted last year while working for the same employer last year?	☐	☐
Did you apply for a job last year while still employed in another one last year?	☐	☐

32. Think about the **longest** job you had during this last year, 1990:

	Yes	No
a. Are you working in this job at present?	☐	☐

b. What is (was) this job/what do (did) you do? ________________________________

c. What type of industry/product/service is (was) it? ____________________________

d. Do (did) you work for? Yourself ☐ Somebody else ☐

e. Where is (was) this job? (Check one)

In or near home community	☐
Elsewhere in the province	☐
Outside the province	☐

f. When did you start this job? Month __________ Year __________

g. How many hours do (did) you work each week on average? __________

h. How much are (were) you paid each week on average? __________

	Yes	No
i. Did you leave another job to take this job?	☐	☐

	Weeks	Months
j. How long have you had this job, or how long did the job last?	☐	☐

k. How satisfied are (were) you with this job? (Check **one**)

Very satisfied . . . . ☐
Satisfied . . . . ☐
Dissatisfied . . . . ☐
Very dissatisfied . . . . ☐

l. How did you get this job? (Check **one**)

It is a family business . . . . ☐
I was self-employed . . . . ☐
I knew somebody who helped me . . . . ☐
I applied to the company
  by telephone . . . . ☐
  in person . . . . ☐
  by application form . . . . ☐
I went to CEIC . . . . ☐
My employer contacted me . . . . ☐
Canada/Newfoundland Youth Employment Strategy . . . . ☐
YMCA, Job Generation,Outreach . . . . ☐

m. What do you think is (was) the MAIN reason you got this job? (Check **one**)

There were lots of jobs to be had . . . . ☐
I had the right experience . . . . ☐
The employer knew me . . . . ☐
I made a good impression during the interview . . . . ☐
I was there at the right time . . . . ☐
I had the right training . . . . ☐

n. How did you find out how to do the work? (Check as many as apply)

Somebody on the job showed me how to do it (orientation) . . . . ☐
There was a short training course offered at work . . . . ☐
The job was related to my training at school . . . . ☐
I learned how to do it myself . . . . ☐

o. Rank each of the following concerning your feelings about the job.

1. Level of pay
2. People you worked with
3. Kind of work you did
4. Community the job was in
5. Level of job security
6. The challenge of the job

	Number
Number of the thing you LIKED BEST about the job	____
Number of the thing you liked NEXT BEST about the job.	____
Number of the thing you LIKED LEAST about the job.	____
Number of the thing you liked NEXT LEAST about the job.	____

Section F

WHAT WAS YOUR FORMAL EDUCATION & TRAINING AS A STUDENT DURING 1990

33. Did you attend any courses or were you enrolled in an educational program last year (1990)?

Yes ☐ No ☐ ☞ **go to last page of questionnaire**

↓

Name of the institution or school you attended.__________________________

Name of the program you were in.___________________________________

Is the institution? In NFLD ☐ Outside of NFLD ☐

a. Did you finish the program? (Check one only)

Yes, with certificate ☐
Yes, without certificate ☐
No ☐
Still in program ☐
When do you expect to graduate (Did you graduate)?
Month _______ Year________

b. How long is/was the course/program

Less than 6 months ☐
6 months to one year ☐
More than one to two year ☐
More than two to three years ☐
4 years ☐
More than 4 years ☐

How many hours of class per week is/was it? ________________________

c. Why did you take this course or program? (Check all that apply)

A way to a good future ☐
Interested ☐
Close to home ☐
Placement with CEIC ☐
Cost was right ☐
Reputation of institution ☐
The course will help me obtain a job ☐
To upgrade skills for my job ☐
Other ☐
If other please specify:____________________________

d. Think back and tell how important were the following in helping you decide to take this program? *(Check one box in each line)*

	No Contact	Helpful	Not Helpful
Parents			
Friends/relatives			
Teacher			
High School Counsellor			
Career Information hot line			
CEIC			
Youth Employment			
Employer			
Other			

e. Do you, or did you:

	Yes	No
live at home while taking the course or program?	☐	☐
get a job related to the course or program you took, or are taking?	☐	☐
work, or are you working, while doing the course or program?	☐	☐

f. How well did/are you do(ing) in the program/course compared to the other students who took (are taking) the course? (Check only one box)

I didn't do very well compared to others doing the course. . . . . ☐
I did (am doing) somewhat below average compared to others doing the course. . . . . . . ☐
I did (am doing) somewhat above average compared to others doing the course. . . . . . . ☐
I did (am doing) better than most others doing the course. . . . . ☐

g. Please indicate if any of the following are or were problems for you while taking the course or program. (Check one box only in each line)

	Not a Problem	Somewhat of a Problem	Very Much a Problem
My high school preparation			
Finding a place to stay			
Getting money for tuition and books			
Getting money to live on			
Getting a job last summer			
Planning the use of time			
Adjusting to the teachers			
Teachers expecting too much work			
Teachers marking too hard			
Math			
Reading			

h. How satisfied are you with the course or program? *(Check one box only in each line)*

	Dissatisfied	Somewhat Satisfied	Quite Satisfied	Very Satisfied
The course in general				
The instruction				
The facilities for taking the course				
Preparation for further studies				
Your personal development				
Problem-solving skills				
Career Guidance				

34. Add up all of the costs associated with obtaining your education since January 1990 (include tuition, books, housing, transportation, clothing and spending money). Could you tell us about how much money you spent on these items so that you could stay in post-secondary school?

____________________________________.

35. Could you tell us from where you go the money you needed? *(Check only one in each line)*

	None	Some	Half	Most	All
Parents					
Spouse/other relatives					
Part-time working during the year					
Summer jobs					
CSL					
Scholarship/bursary					
Other (borrowed money, savings) ______________ (name)					

INFORMATION FOR FUTURE FOLLOW-UP

PRINT name, address, and the telephone number where you can most usually be reached during the coming year.

YOUR NAME: ______________________________
ADDRESS: ______________________________
COMMUNITY: ______________ PROVINCE: __________ POSTAL CODE: ________
TELEPHONE: ______________

THANK YOU FOR YOUR COOPERATION

THIS INFORMATION WILL BE KEPT IN STRICT CONFIDENCE
AND WILL BE USED ONLY FOR FUTURE FOLLOW-UPS
IN THE YOUTH TRANSITION INTO THE LABOUR MARKET STUDY

Appendix D

Interview Schedule

Administrators - Postsecondary Institutions in Newfoundland

Summer, 1991

ADMINISTRATORS - POSTSECONDARY INSTITUTIONS IN NEWFOUNDLAND

Interview Schedule

Introduction

The purpose of this interview is to get your views on a number of questions pertaining to participation in postsecondary education in Newfoundland. The information, which will be available only to the researcher, is to be used as part of a doctoral study on postsecondary participation in the province. The questions are framed to obtain your general perceptions about specific issues rather than to elicit quantitative answers. Please feel free to elaborate as you see fit.

Questions

1. In terms of what it could be, do you think participation generally in postsecondary education in Newfoundland is low, medium or high?

   (a) How would you rate participation in

   community colleges?
   technical schools?
   the university?

   (b) Do you think there is a need to increase the province's level of participation?

   Probe: Why do you think so?

2. Do you think our low participation rate is a problem?

   Probe: In what way is it a problem or not?

   In what area is it a problem or not?

3. Does a need exist to study the problem of participation in postsecondary education in Newfoundland?

   Probe: Why not? Or from what perspective should it be examined do you think?

4. Could your institution currently accommodate more students?

   (a) About what percentage more?

   (b) In which department/faculty?

5. Do you think more young people want to take postsecondary education but for some reason cannot do so?

   Probe: *What are some of the (other) factors which might impede them?*

6. From what you have said up to this point, should we encourage more of our young people (not) to enrol in postsecondary education?

   Probe: *How can we (not) do it?*

   Who should take the initiative?

Thank you very much. If you wish, I will send you a summary of your responses before I incorporate any of them in my study.

Appendix E

Interview Schedule

Principals and Guidance Counsellors

Winter and Spring, 1992

PRINCIPALS AND GUIDANCE COUNSELLORS

Interview Schedule

1. Do you think there is a need to increase the province's participation in postsecondary education?

   Probe: *Why do you think so?*

2. Would you know approximately what percentage of your own high school graduates attend a postsecondary institution?

   Probe: *Does your school keep statistics on students who further their education following high school graduation?*

3. Do you think more young people want to take postsecondary education but for some reason cannot do so?

   Probe: *Is this true of students in this area?*

4. Does your school promote postsecondary participation through any special programs or information?

   Probe: *Could you do more?*
   In what areas?

5. Is Career Education 3101 taught in this school?

   Probe: *Who teaches this course?*
   Do the students find it helpful?

6. Do students have access to advanced math in your school? To Physics and Chemistry?

   Probe: *Does this inhibit/promote participation in postsecondary education?*

7. Do you think your students are generally satisfied with their high school experience?

   Probe: *What parts, eg., academics, extra curricular, career aspirations?*

8. Is motivation a problem generally with your graduates?

   Probe: *Would lack of motivation/aspiration likely prevent them from furthering their education?*

   Probe: *How would you say the motivation is among your students who are not doing so well?*

9. Would you say that family and peer influence in this area/neighbourhood detract young people from completing high school?

   Probe: *Would the same hold true for going on to postsecondary education?*

10. What would be some of the other barriers to students in this area/neighbourhood from furthering their education?

    Probe: *Whose responsibility is it to remove those barriers?*

Appendix F

Interview Schedule

Students

Spring, 1992

STUDENT INTERVIEW QUESTIONS

*****NB.**Ask first if they went to postsecondary educ. since Jan.'91***

1. What influenced your decision not to continue your education after you graduated from high school?

   Probe: *Did you get a job after high school?*

   Probe: *Did that make any difference to you in continuing your education?*

   Probe: *Did you know what you wanted to do regarding a job or career when you graduated from high school?*

   Probe: *Did that influence your decision not to go on to postsecondary education?*

   Probe: *What did you feel about the career or employment opportunities available to you at that time?*

2. How do you feel about future prospects as far as a job is concerned?

   Probe: *If you were more optimistic, would you undertake further education?*

   Probe: *Considering your optimism, does that affect your thinking about getting further education?*

3. What are your thoughts now about your overall high school experience?

   Probe: *Can you tell me if your high school experience prepared you to take further education?*

   Probe: *Do you think it prepared you to get a job?*

   If yes, how; if no, why?

4. Can you remember what your thoughts about postsecondary education were when you were in high school?

Probe: *Did you think it would be different from high school? In what ways?*

Probe: *Did anything about postsecondary education worry you in particular (for example, being able to handle the work, distance, cost etc.)?*

Probe: *Do you think a postsecondary degree, diploma, or certificate would help you get a job or find a better job?*

5. Do you have any brothers or sisters who have gone on to postsecondary education?

Probe: *Were you encouraged to go?*

6. Did your parents try to influence you about going on to further education?

Probe: *Was there much discussion about it in the family?*

Probe: *Would the family have been able to help you financially if you had decided to go?*

7. Did you get much encouragement in high school to continue your education?

Probe: *If no, why do you think the school wasn't more supportive?*

Probe: *Who encouraged you; principal, teachers counsellor, etc.?*

Probe: *Did your school have a guidance counsellor?*

Probe: *Did you meet with him/her to discuss your future plans?*

Probe: *If no, can you tell me why not?*

8. Did many of your friends go on to postsecondary education?

Probe:	*Do you think they had any influence on your decision not to go?*

9. Is there anything preventing you from going on to postsecondary education now if you wanted to go?

Probe:	*What are some of the barriers? (Opportunity here for those with a disability to discuss it).*

Appendix G

High School Course Selection for Computation of Academic Achievement

Summer, 1992

Appendix G

High School Courses Selected to Compute Academic Achievement

Course Number	Course Description
1. ED033112	Business English
2. ED033101	Language
3. ED033102	Business English
4. ED033104	Language Study
5. ED043201	Thematic Literature
6. ED043202	Literature Heritage
7. ED043203	Folk Literature
8. ED063200	French
9. ED063201	French
10. ED063212	French
11. ED063221	Accelerated French
12. ED093201	Advanced Math
13. ED093203	Academic Math
14. ED093104	Statistics
15. ED093125	Calculus Readiness
16. ED093202	Business Math
17. ED093325	Calculus
18. ED143201	Biology
19. ED143202	Chemistry
20. ED143203	Geology
21. ED143204	Physics
22. ED143205	Environmental Science
23. ED153201	World History
24. ED153202	World Geography
25. ED153204	World Problems
26. ED153214	World Problems
27. ED153234	World Problems (French Language)

Appendix H

Descriptive Statistics for Variables Used in the Regression Models

Table AH.1

Descriptive Statistics for Variables used in the Regression Model (Males)

Mnemonic	Mean	Std. Dev	Kurtosis	Skewness	Cases
R_U	1.431	.495	-1.925	.277	2540
Reg 2	.121	.326	3.394	2.322	2540
Reg 3	.296	.457	-1.202	.894	2540
Reg 4	.170	.375	1.102	1.761	2540
Reg 5	.050	.218	15.085	4.132	2540
Plans	-.063	1.103	29.245	-5.416	2294
Famsize	2.762	2.020	5.672	2.143	2342
Attach	-.009	.904	-.609	.522	2045
Valued	-.032	.563	.460	-1.241	2442
Guidance	-.901	.207	-1.160	-.065	1433
Careinfo	-.075	.999	.011	.722	2540
Advmath	.182	.386	.883	1.698	2540
Wellbe	-.026	.997	.088	-.295	2307
Lstyle	-.036	.507	.112	.703	2379
Avg	63.539	13.573	5.076	-1.199	2540
Hsgrd	1.916	.273	7.060	-3.009	2462
Vocself	.041	1.009	1.048	.830	2367
Sigoths	-1.003	.630	-.068	.094	2357
Barriers	.070	.994	.284	1.291	2383
Part	.631	.483	-1.021	-.990	2540

Table AH.2

Descriptive Statistics for Variables used in the Regression Model (Females)

Mnemonic	Mean	Std. Dev	Kurtosis	Skewness	Cases
R_U	1.426	.495	-1.912	.299	2889
Reg 2	.127	.333	3.004	2.236	2889
Reg 3	.280	.449	-1.036	.982	2889
Reg 4	.169	.375	1.116	1.765	2889
Reg 5	.045	.207	17.302	4.392	2889
Plans	.039	.879	29.245	-5.416	2642
Famsize	2.911	2.231	5.095	2.064	2722
Attach	.003	.983	-.609	.522	2540
Valued	.031	.484	.460	-1.241	2782
Guidance	-.948	.255	-1.160	-.065	1851
Careinfo	.066	.966	.011	.722	2889
Advmath	.177	.381	.883	1.698	2889
Wellbe	.037	.929	.088	-.295	2502
Lstyle	.029	.541	.112	.703	2735
Avg	65.496	13.209	5.076	-1.199	2889
Hsgrd	1.949	.218	14.627	-4.076	2834
Vocself	-.040	.987	1.048	.830	2677
Sigoths	-.899	.614	-.068	.094	2631
Barriers	-.081	.924	1.695	1.731	2688
Part	.722	.448	-1.021	-.990	2889

Table AH.3

Descriptive Statistics for Variables used in the Regression Model (Integrated)

Mnemonic	Mean	Std. Dev	Kurtosis	Skewness	Cases
Gender	1.532	.499	-1.984	-.129	5429
R_U	1.429	.495	-1.917	.289	5429
Reg 2	.125	.330	3.177	2.275	5429
Reg 3	.287	.453	-1.117	.940	5429
Reg 4	.169	.375	1.107	1.763	5429
Reg 5	.047	.212	16.190	4.264	5429
Plans	-.008	.991	22.391	-4.790	4936
Famsize	2.842	2.136	5.389	2.106	5064
Attach	-.002	.947	-.570	.513	4585
Valued	.001	.524	-.132	-1.062	5224
Guidance	-.928	.218	-1.138	-.152	3284
Careinfo	.000	1.000	.018	.762	5429
Advmath	.179	.384	.800	1.673	5429
Wellbe	.007	.962	-.052	-.256	4809
Lstyle	-.001	.526	.246	.725	5114
Avg	64.580	13.415	6.077	-1.446	5429
Hsgrd	1.934	.246	10.170	-3.488	5296
Vocself	-.002	.998	.962	.829	5044
Sigoths	-.948	.624	-.033	.105	4988
Barriers	-.010	.960	2.952	1.831	5071
Part	.679	.467	-1.410	-.769	5429

Appendix I

Measurement Models for the Linear Composites

Table 4.2a

Measurement Model for the Career Plans Composite

Mnemonic	Description/ Code	Factor Loading	Factor Score Coefficient	Residual
Cp 1	Q.41/s2029	.9431	.4525	.332
Cp 2	Q.43/s2031	.9467	.4542	.322
Cp 3	Q.53/s2068	.5463	.2621	.837
Cp 4	Q.53/s2068	n/a*	n/a	n/a
Cp 5	Q.29b/s1070			
Cp 6	Q.31/s2002			
Cp 7	Q.35/s2009			
Cp 8	Q.15/L3315001			

Alpha Reliability = .765
Eigenvalue = 2.084

* Variables with factor loadings below .40 are not reported

Table 4.4a

Measurement Model for the Attachment Composite

Mnemonic	Description/ Code	Factor Loading	Factor Score Coefficient	Residual
Attach 1	Q.37/s2022	.7187	.4159	.695
Attach 2	Q.60/s2133	.6471	.3744	.762
Attach 3	Q.13/L3313001	.7065	.4088	.708
Attach 4	Q.17/L3317002	.5241	.3137	.840
Attach 5	Q.21/L3321002	n/a*	n/a	n/a
Attach 6	Q.21/L3321007			
Attach 7	Q.32/L3332004			
Attach 8	Q.33/L3333012			
Attach 9	Q.54/s2070			

Alpha Reliability = .570
Eigenvalue = 1.728

* Variables with factor loadings below .40 are not reported

Table 4.6a

Measurement Model for the Value of Education Composite

Mnemonic	Description/ Code	Factor Loading	Factor Score Coefficient	Residual
Valued 1	Q.40/s2028	.902	.554	.432
Valued 2	Q.40/s2030	.902	.554	.432
Valued 3	Q.45/s2047	n/a*	n/a	n/a
Valued 4	Q.47/s2049			
Valued 5	Q.36a/s2013			
Valued 6	Q.36a/s2014			

Alpha Reliability = .779
Eigenvalue = 1.628

* Variables with factor loadings below .40 are not reported

Table 4.8a

Measurement Model for the Guidance Composite

Mnemonic	Description/ Code	Factor Loading	Factor Score Coefficient	Residual
Guid 1	Q.64/s3003a	n/a*	n/a	n/a
Guid 2	Q.36a/s2017			
Guid 3	Q.22/L3322006	.7436	.4155	.669
Guid 4	Q.23/L3323006	.7708	.4307	.637
Guid 5	Q.33d/L3333028	.6333	.3538	.774
Guid 6	Q.64/s3003c	.4913	.2745	.871

Alpha Reliability = .610
Eigenvalue = 1.790

* Variables with factor loadings below .40 are not reported

Table 4.10a

Measurement Model for the Career Information Composite

Mnemonic	Description/ Code	Factor Loading	Factor Score Coefficient	Residual
Cinf 1	Q.49a/s2051	n/a*	n/a	n/a
Cinf 2	Q.59/s2121	.7593	.2993	.651
Cinf 3	Q.59/s2122	.5457	.2151	.838
Cinf 4	Q.59/s2123	.5242	.2066	.851
Cinf 5	Q.59/s2125	.7626	.3006	.647
Cinf 6	Q.59/s2126	.5200	.2050	.854
Cinf 7	Q.59/s2129			
Cinf 8	Q.59/s2127	.5584	.2201	.829
Cinf 9	Q.59/s2128	.4728	.1864	.881
Cinf 10	Q.59/s2131			
Cinf 11	Q.59/s2132			
Cinf 12	Q.26/s1065			
Cinf 13	Q.26/s1066			
Cinf 14	Q.52a/s2064			
Cinf 15	Q.21/s2051			

Alpha Reliability = .695
Eigenvalue = 2.537

* Variables with factor loadings below .40 are not reported

Table 4.12a

Measurement Model for the Well-being Composite

Mnemonic	Description/ Code	Factor Loading	Factor Score Coefficient	Residual
Wb 1	Q.5/L335001	.5858	.1799	.810
Wb 2	Q.5/L335002	.6722	.2065	.740
Wb 3	Q.5/L335003	n/a*	n/a	n/a
Wb 4	Q.5/L335004			
Wb 5	Q.5/L335005			
Wb 6	Q.5/L335006			
Wb 7	Q.5/L335007			
Wb 8	Q.5/L335008	.4089	.1256	.912
Wb 9	Q.5/L335010	.6851	.2104	.728
Wb 10	Q.6/L336001	.6366	.1955	.771
Wb 11	Q.19/L3319001			
Wb 12	Q.19/L3319002	.4410	.1355	.897
Wb 13	Q.19/L3319003			
Wb 14	Q.19/L3319004	.5996	.1842	.800
Wb 15	Q.19/L3319005			
Wb 16	Q.19/L3319006	.4377	.1345	.899
Wb 17	Q.19/L3319007	.5739	.1763	.819
Wb 18	Q.19/L3319008			
Wb 19	Q.19/L3319009	.5863	.1801	.810

Alpha Reliability = .768
Eigenvalue = 3.225

* Variables with factor loadings below .40 are not reported

Table 4.14a

Measurement Model for the Vocational Self-Concept Composite

Mnemonic	Description/ Code	Factor Loading	Factor Score Coefficient	Residual
Vocs 1	Q.31/s2002	n/a*	n/a	n/a
Vocs 2	Q.33/s2007			
Vocs 3	Q.62a/s3001a			
Vocs 4	Q.62b/s3001b			
Vocs 5	Q.62c/s3001c			
Vocs 6	Q.62d/s3001d			
Vocs 7	Q.62e/s3001e			
Vocs 8	Q.62h/s3001h			
Vocs 9	Q.62k/s3001k			
Vocs 10	Q.65/s3004			
Vocs 11	Q.65/s3005	.6098	.2382	.792
Vocs 12	Q.65/s3006	.7828	.3057	.622
Vocs 13	Q.65/s3007	.7094	.2771	.705
Vocs 14	Q.65/s3008	.6670	.2605	.745
Vocs 15	Q.65/s3009	.4996	.1951	.866
Vocs 16	Q.65/s3010			
Vocs 17	Q.65/s3011			
Vocs 18	Q.65/s3012			
Vocs 19	Q.65/s3013	.6197	.2601	.789
Vocs 20	Q.65/s3014			
Vocs 21	Q.65/s3015			

Alpha Reliability = .730
Eigenvalue = 2.560

* Variables with factor loadings below .40 are not reported

Table 4.16a

Measurement Model for the Significant Others Composite

Mnemonic	Description/ Code	Factor Loading	Factor Score Coefficient	Residual
Sig 1	Q.36a/s2012	.5585	.2559	.829
Sig 2	Q.36a/s2013	-.6749	-.3093	.738
Sig 3	Q.36a/s2014	-.7348	-.3367	.678
Sig 4	Q.36a/s2015	.4854	.2224	.874
Sig 5	Q.36a/s2016	.6045	.2770	.797
Sig 6	Q.36a/s2018	.5284	.2398	.852
Sig 7	Q.33d/L3333025	n/a*	n/a	n/a
Sig 8	Q.33d/L3333026			
Sig 9	Q.33d/L3333027			

Alpha Reliability = .649
Eigenvalue = 2.182

* Variables with factor loadings below .40 are not reported

Table 4.18a
Measurement Model for the Barriers Composite

Mnemonic	Description/ Code	Factor Loading	Factor Score Coefficient	Residual
Bar 1	Q.24/s1055a	n/a*	n/a	n/a
Bar 2	Q.24/s1055c			
Bar 3	Q.24/s1055e			
Bar 4	Q.24/s1055f			
Bar 5	Q.24/s1055g			
Bar 6	Q.24/s1055h			
Bar 7	Q.24/s1055i			
Bar 8	Q.24/s1055j			
Bar 9	Q.54a/s2069	.7904	.3890	.613
Bar 10	Q.54a/s2070			
Bar 11	Q.54a/s2071	.6564	.3766	.755
Bar 12	Q.54a/s2072			
Bar 13	Q.54a/s2073			
Bar 14	Q.54a/s2074			
Bar 15	Q.54a/s2075			
Bar 16	Q.54a/s2076			
Bar 17	Q.54b/s2078	.8679	.4585	.496
Bar 18	Q.21/L3321001			
Bar 19	Q.21/L3321003			
Bar 20	Q.21/L3321004	.4419	-.0729	.897
Bar 21	Q.21/L3321005			
Bar 22	Q.21/L3321006	.4692	-.0560	.883
Bar 23	Q.33/L3333038			
Bar 24	Q.33/L3333040			
Bar 25	Q.33/L3333042			
Bar 26	Q.33/L3333047			
Bar 27	Q.33/L3333048			

Alpha Reliability = .675
Eigenvalue = 2.224

* Variables with factor loadings below .40 are not reported

Appendix J

Multiple Regression Parameters for the Intervening Variables

Integrated Model

Table 5.1a

Multiple Regression Parameters for the Intervening Variables (Integrated Model)

Independent Variables	Avg.				
	b	Se b	Beta	t	
Gender	1.479	.331	.055	4.472	**
R_u	.206	.362	.008	0.570	
Reg 2	-1.521	.552	-.037	-2.754	*
Reg 3	-.687	.431	-.023	-1.594	
Reg 4	-1.689	.489	-.047	-3.452	**
Reg 5	-3.684	.807	-.058	-4.566	**
Plans	.659	.169	.049	3.908	**
Famsize	-.222	.079	-.035	-2.817	*
Attach	-1.160	.178	-.082	-6.554	**
Valued	1.740	.174	.129	10.008	**
Guidance	-.303	.770	-.005	-0.394	
Careinfo	.783	.168	.058	4.667	**
Advmath	11.214	.446	.321	25.167	**
Wellbe	1.066	.173	.076	6.155	**
Lstyle	.534	.170	.030	3.144	*

Multiple $R = .4435$ $p \leq .05$*
$R^2 = .1967$ $p \leq .01$**

Table 5.2a

Multiple Regression Parameters for the Intervening Variables (Integrated Model)

Independent Variables	Hsgrd				
	b	Se b	Beta	t	
Gender	.022	.007	.046	3.425	**
R_u	.014	.007	.028	1.929	
Reg 2	-.011	.011	-.014	-0.978	
Reg 3	.010	.009	.019	1.221	
Reg 4	-.002	.010	-.004	-0.242	
Reg 5	.015	.016	.013	0.912	
Plans	.004	.003	.015	1.102	
Famsize	-.001	.002	-.012	-0.878	
Attach	-.006	.003	-.022	-1.616	
Valued	.033	.003	.133	9.535	**
Guidance	-.003	.015	-.003	-0.199	
Careinfo	.024	.003	.099	7.274	**
Advmath	.050	.009	.078	5.627	**
Wellbe	.010	.003	.038	2.831	*
Lstyle	-.002	.003	-.007	-0.550	

Multiple $R = .2319$ $p \leq .05$*
$R^2 = .0538$ $p \leq .01$**

Table 5.3a

Multiple Regression Parameters for the Intervening Variables (Integrated Model)

Independent Variables	Vocself				
	b	Se b	Beta	t	Sig t
Gender	-.091	.027	-.046	-3.389	**
R_u	-.022	.029	-.011	-0.755	
Reg 2	-.135	.045	-.044	-2.993	*
Reg 3	-.096	.035	-.043	-2.725	*
Reg 4	.003	.040	.001	0.085	
Reg 5	-.073	.066	-.016	-1.115	
Plans	-.026	.014	-.026	-1.897	
Famsize	-.021	.006	-.044	-3.212	*
Attach	-.081	.014	-.077	-5.605	**
Valued	.053	.014	.053	3.738	**
Guidance	-.145	.063	-.032	-2.317	*
Careinfo	.023	.014	.023	1.687	
Advmath	.248	.036	.095	6.844	**
Wellbe	.063	.014	.060	4.454	**
Lstyle	.026	.014	.025	1.867	

Multiple $R = .1966$ $p \leq .05$*
$R^2 = .0387$ $p \leq .01$**

Table 5.4a

Multiple Regression Parameters for the Intervening Variables (Integrated Model)

Independent Variables	Sigoths				
	b	Se b	Beta	t	Sig t
Gender	.096	.017	.076	5.692	**
R_u	-.076	.018	-.060	-4.154	**
Reg 2	-.088	.028	-.046	-3.128	*
Reg 3	-.042	.022	-.031	-1.932	
Reg 4	.021	.025	.012	0.838	
Reg 5	.016	.041	.005	0.382	
Plans	-.018	.009	-.029	-2.070	*
Famsize	.028	.004	.096	6.981	**
Attach	-.006	.009	-.008	-0.622	
Valued	-.049	.009	-.078	-5.561	**
Guidance	-.162	.039	-.056	-4.141	**
Careinfo	.026	.008	.042	3.048	*
Advmath	.031	.023	.019	1.365	
Wellbe	-.039	.009	-.060	-4.452	**
Lstyle	-.003	.009	-.005	-0.383	

Multiple $R = .2034$ $p \leq .05$*
$R^2 = .0413$ $p \leq .01$**

Table 5.5a

Multiple Regression Parameters for the Intervening Variables (Integrated Model)

Independent Variables	Barriers				
	b	Se b	Beta	t	Sig t
Gender	-.092	.025	-.048	-3.755	**
R_u	-.069	.027	-.035	-2.546	*
Reg 2	-.044	.041	-.015	-1.075	
Reg 3	.050	.032	.024	1.569	
Reg 4	.122	.036	.048	3.343	**
Reg 5	-.012	.060	-.002	-0.197	
Plans	-.041	.012	-.042	-3.280	*
Famsize	.020	.006	.044	3.350	**
Attach	.059	.013	.058	4.416	**
Valued	-.252	.013	-.261	-9.456	**
Guidance	.036	.057	.008	0.632	
Careinfo	.003	.012	.003	0.266	
Advmath	-.252	.033	-.101	-7.596	**
Wellbe	-.028	.013	-.028	-2.162	*
Lstyle	-.071	.013	-.071	-5.602	**

Multiple $R = .3615$ $p \leq .05$*
$R^2 = .1307$ $p \leq .01$**